TERRA

THE NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY
VOL. 25, NO. 1 · SEPTEMBER/OCTOBER 1986

Where Wonders Never Cease

ANNOUNCING THE NEW WONDERS OF MEMBERSHIP IN THE NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY

New membership categories and benefits are effective for those joining or renewing after July 1, 1986. Now is the time to consider increasing your membership support ...and increasing your benefits!

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- Unlimited free admission at both the Natural History Museum in Exposition Park AND the George C. Page Museum of La Brea Discoveries.
- One year's free subscription to *Terra*.
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- An exclusive behind-the-scenes tour of the curatorial department of your choice for you and up to five guests.

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- All of the above, plus an Annual Sponsors' Luncheon with the Director of the Museum and Chief Curators.

All membership donations are used to support the Museum's programs, to enrich our collections for all to enjoy, and to help us continue to bring extraordinary new exhibits to Los Angeles. To inquire about increasing your membership donation, please call the Membership Office at 213/744-3426. Thank you!

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TERRA

THE MEMBERS' MAGAZINE
OF THE NATURAL HISTORY MUSEUM
OF LOS ANGELES COUNTY
AND THE PAGE MUSEUM
OF LA BREA DISCOVERIES

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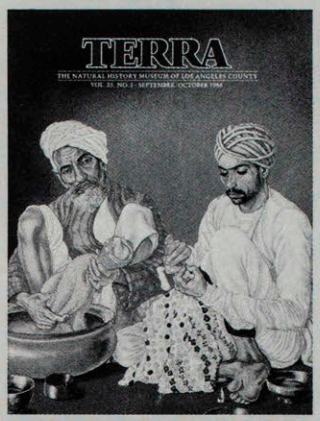

COVER: Tie-Dyers. 1930, Fresco secco (tempera) painting on canvas, 50" by 40". Anonymous lender. This is one of the thirty-five paintings from The Heritage of India by the American artist Stowitts, which is on display in the Natural History Museum's Rotunda from October 3, 1986, to January 18, 1987.

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MUSEUM ON THE MOVE

WEINGART FOUNDATION GIVES ADDITIONAL $2 MILLION. The Weingart Foundation has increased its gift to the Natural History Museum's Seventy-Fifth Anniversary Campaign to $3 million from its initial pledge of $1 million.

Noting that the Weingart Foundation's $3 million contribution, one of the largest in the museum's history, represents 10 percent of the museum's current $30 million fund-raising effort, Harry J. Volk, Chairman of the Weingart board of directors, expressed the hope that other foundations and corporations in the community will follow suit to help the museum reach its seventy-fifth anniversary fund drive goal.

The Weingart gift will go toward construction of the new $10 million, 40,000-foot Pavilion of Evolving Life, which will front on Exposition Boulevard and become the museum's new north entrance. It will be a major segment of the museum's new expansion program, housing a series of three-dimensional and participative exhibits that will provide a dramatic extension of classroom learning about the origins and development of plant and animal life.

Dr. Craig C. Black, director of the museum, said that the Weingart gift will have a positive impact on hundreds of thousands of young people beyond the 150,000 school-age children who already visit the museum each year. "Because of the Weingart Foundation's demonstrated concern for the educational welfare of the community and the quality of life of its citizens, particularly the young people who will benefit from this educational project, we think the foundation's $3 million response to our fund-raising program is especially appropriate," Dr. Black said. "We're very grateful for their participation in this one-of-a-kind educational project."

NATIONAL ENDOWMENT FOR THE HUMANITIES CHALLENGE MET BY THE NATURAL HISTORY MUSEUM. The Natural History Museum has met its National Endowment for the Humanities challenge of raising $2.25 million in new or increased nonfederal contributions. The challenge grant of $750,000 offered in March 1983 by the Chairman of the NEH, William J. Bennett, who is now Secretary of Education, had a twofold purpose: to enhance the curatorial staffs in the departments of history and anthropology and to strengthen the museum's fund-raising and development programs.

Individual donors contributed almost $500,000 with corporations and foundations accounting for $1.4 million. The remaining funds were garnered from the museum's highly successful Dinosaur Ball.

The NEH grant provided funding for three staff members to assist in the curation of the History Division's collections: Dr. Guy Bishop from the University of Nebraska, Dr. William L. Cumiford from California State University, Fullerton, and Dr. Errol Stevens, former director of the Indiana Guide Project. Nicole Bouche, from the Library of the Institute of Transportation Studies in Berkeley, joined the staff as Research Librarian in the Seaver Center in Western History. Dr. Margaret Ann Hardin, formerly guest curator with the Pueblo Zuni tribe in western New Mexico, joined the staff as Associate Curator and Section Head of Anthropology, and is now involved in planning the new Hall of Native American Cultures.

In addition, the museum established a professional caliber development program, headed by Natural History Museum Foundation Executive Vice President, Dr. Kenneth J. Daponte, that has enabled the museum to double both its membership and individual contributions, generate a sixfold increase in annual corporate support, and launch a $30 million, Seventy-Fifth Anniversary Campaign.

The NEH Challenge Grant was the first major grant obtained for the museum by Dr. Craig C. Black after he became Director, and it has proven to be the catalyst that has sparked the current resurgence of the Natural History Museum.

REDDIN ELECTED NATURAL HISTORY MUSEUM ALLIANCE BOARD CHAIRMAN. Betty J. Reddin has been elected Chairman of the Natural History Museum Alliance Board following her tenure as Vice Chairman of the Alliance Board's Executive Committee.

The Natural History Museum Alliance Board is the general organization for the museum's more than 16,000 members. An arm of the Natural History Museum Foundation, the Alliance has its own Board of Directors, which is primarily responsible for helping to implement the museum's public programs and leading its annual giving efforts.

Betty J. Reddin, the recently elected Chairman of the Natural History Museum's Alliance Board of Directors. Photograph by Dick Meier.

Mrs. Reddin has been continuously active in the museum since she volunteered as a docent in 1965. She has been a member of the Alliance board for sixteen years, during which time she helped launch and co-chaired the museum's highly successful Dinosaur Ball.

Mrs. Reddin has for many years contributed her time and talent to many cultural and educational programs in Los Angeles. She is a member of Achievement Rewards for College Scientists and the Los Angeles Library Association; she has also served for eleven years on the Library Commission and was twice president of the commission. She proposed and helped found the library's docent program. Mrs. Reddin holds memberships in numerous organizations, including the World Affairs Council and Town Hall of California.

BUSINESS ASSOCIATES' SUPPORT SETS NEW RECORD. The Board of Trustees Business Associates Committee, led by Chairman Dan L. McGurk and Trustees A. Frederick Gerstell and Stephen R. Onderdonk, reports that as of June 30, 1986, the ninety member companies of the Natural History Museum's Business Associates had contributed a grand total of $301,043. This exceeds the committee's goal of $285,000 and sets an all-time corporate annual giving record for the museum.

Since the last report (*Terra*, May/June 1986), six new members have joined, including Atlantic Richfield Company and Lockheed Corporation at the Corporate Leader level, and Caesar's World, Chicago Title, May Company, and Pacific Bell at the Corporate Contributor level.

Member companies contribute from

$2,000 to $10,000 each year. In addition to receiving full membership privileges, representatives of the member companies are given invitations to special museum events, and each company is recognized on a plaque at the museum's north entrance. The $10,000 Corporate Leaders have their own Employee Day at the museum—one day each year when all company employees may visit the museum free of charge.

For more information about the Business Associates, please call Dr. Donald J. Gross in the Foundation office at 213/744-3307.

MUSEUM FELLOWS PROGRAM EXCEEDS GOALS. The Natural History Museum's Fellows program raised more than $135,000 in support of exhibitions and educational activities during the 1985–86 program year. This key group of museum friends is now approaching a membership of 120, nearly doubling in size over the past eighteen months.

This year Fellows enjoyed several gala preview openings of major exhibits as guests of the Director, with black-tie evenings held in advance of the public showings of Maya: Treasures of an Ancient Civilization, the Mercedes-Benz Centennial Exhibition, and Ebla to Damascus. The season ahead will again offer a number of exclusive social occasions and special events as privileges of Fellows membership.

Other benefits include public recognition on the Fellows plaque at the museum's north entrance, preferred parking for all Coliseum events, and special museum-use opportunities. Further information about the Fellows program can be obtained from the Foundation office at 213/744-3307 or 213/744-3438.

TRAVEL PROGRAM REPORT. Over the last year more than 360 Natural History Museum members toured exotic foreign locales, while another 600 took advantage of domestic natural history tours. In addition to giving members an opportunity to take unique trips for both education and enjoyment, the travel program is also becoming an important new source of funds. Tax-deductible contributions, included in the price of the tours, have added more than $45,000 to the museum's income during the past year.

Rebecca Chapman, Membership Director, extends her sincere thanks to each of the travelers and encourages new members to consider taking a trip with the Natural History Museum next year. The travel program brochure in this issue of *Terra* gives a preview of the 1987 tour opportunities. In addition to these foreign and domestic trips, the Education Division will offer many local one-day field trips to study the natural history of southern California.

Returning from the Land of the Maya tour of the Yucatan last March, one enthusiastic traveler said, "This trip was one of the highlights of my life. Keep doing what you're doing!" In 1987 not only will the travel program "keep doing," it will be even better.

MUSEM MEMBERSHIP AT ALL-TIME HIGH. The past year has been a record-breaking one for membership at the Natural History Museum. The number of members is up more than 50 percent from a year ago to a total of more than 16,000. Volunteers have played a major role in bringing in more than half of the new members this year.

Members continue to be very loyal to the museum as evidenced by their 80 percent renewal rate, one of the highest of any museum in the country. And during the past year, 16 percent of the members have upgraded to a higher support level.

Membership revenue for the year was also up by 35 percent to a total of almost $500,000, surpassing the goal for the year by $50,000. Membership revenues are important in helping to maintain the museum's tradition of excellence in exhibits, education, research, public programs, and collections.

The museum hopes to break even more records this coming year as we strive to increase the membership to 25,000. In return, the Natural History Museum has pledged to make this one of the most exciting years ever.

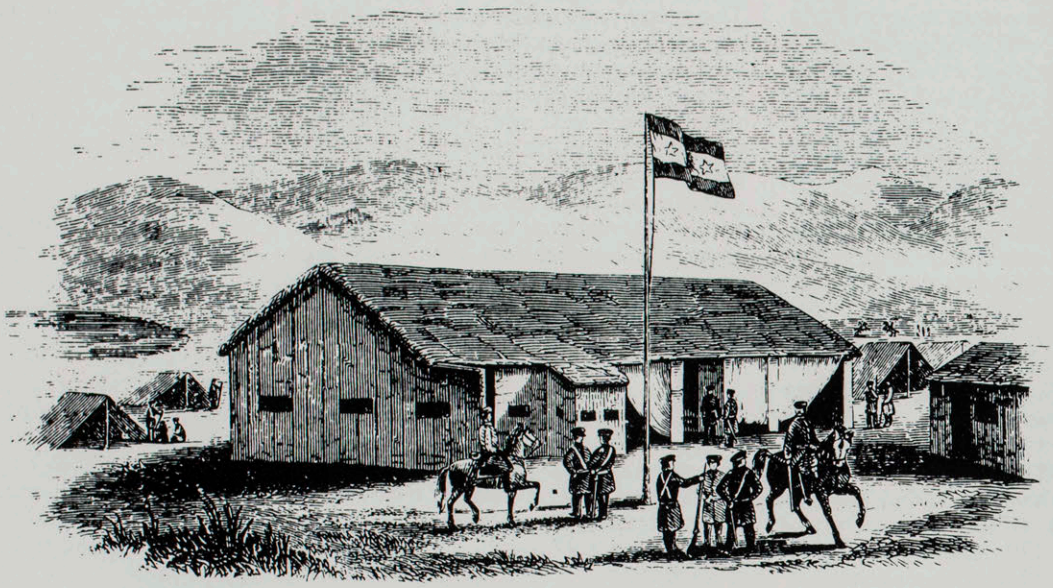
We're looking for a few good fellows.

Who are the Fellows of the Natural History Museum?
They are a select group of over 100 community leaders, men and women, that support the Museum's expanding programs in exhibitions and education, and at the same time avail themselves of some excellent advantages. By contributing from $1,000 to $10,000 over the course of one year, you can become a Fellow of the Museum and enjoy the following benefits:

- Invitations to Special Exhibit Openings
- Public Recognition
- Preferred Parking for Coliseum & Sports Arena Events
- Curator and Collections Access
- Museum Use Privileges

Become a Fellow of the Natural History Museum.
For more information call 213/744-3438.

Ensenada's Boom 1870-1900

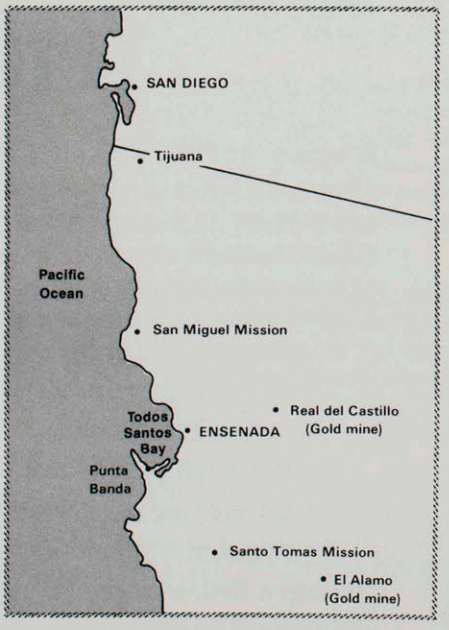


A drawing of the Gastelum Rancho in its incarnation as Fort McKibbin, the headquarters of an unsuccessful attempt to foment rebellion in Baja California and Sonora in 1855. The area around Ensenada was granted to Sergeant José Manuel Ruiz as a rancho in 1804. It eventually passed to Ruiz's son-in-law, Francisco Gastelum, who gave his name to the rancho and later to one of the major streets of Ensenada. Seaver Center for Western History Research.

by WILLIAM MASON

The site that would one day become the city of Ensenada was known to the early explorers of the northern coast of Baja California. Juan Rodriguez Cabrillo had referred to the site as "San Mateo" in 1542. In November 1602, Sebastian de Viscaino landed at the location and named it *Ensenada de Todos Santos*, "Cove of All Saints" (November 1 is All Saints' Day). Today it is customary to refer to the city as Ensenada and to the bay as Todos Santos.

The original inhabitants of the region were the Tipai, or Diegueño, who were closely related to the Indians of the San Diego area. Their villages usually consisted of 50 to 200 people, and they subsisted largely by hunting and gathering. They had a reputation for ferocity, according to Spanish accounts of the late 1700s. Governor Felipe de Neve suggested that the mail route and supply trail be run farther inland to avoid the Indians along the coast between Ensenada and San Diego after they attacked a small party of soldiers.



Aside from scattered Indian bands, in the late 1700s the area around Ensenada remained unsettled, probably because there was insufficient water for irrigation, a prime requisite for a mission. It was not until 1804, when Sergeant Jose Manuel Ruiz asked the governor of California for the area as a rancho, that there was any effort to establish a settlement. Two nearby missionaries and two local Indian chiefs agreed to the Ruiz grant. Ruiz eventually passed the rancho on to his daughter and son-in-law. The latter was Francisco Gastelum, a former soldier who had served under Ruiz.

Ensenada continued as the Gastelum rancho with few events worthy of note until the mid-1850s, when the ranch house was made the headquarters of William Walker's filibustering attempt against Baja California and Sonora. Christened "Fort McKibben" by Walker, the Gastelum house served as his command post for several weeks, until he was defeated during an ill-conceived march against Sonora via the Colorado River. After this incident, peace returned

This 1891 photograph shows part of Mexico's army lined up for a Cinco de Mayo celebration in front of the International Company's headquarters. The International Company was founded by Luis Huller and Major George Sisson after the Mexican government granted a huge concession of land in northern Baja California to the two men. They began to develop the area in 1886, promoting the town widely to lure investors and settlers. The company was discredited when some of the directors became involved in an 1888 plot to annex Baja California to the United States. F. H. Maude Collection, Seaver Center for Western History Research.

to the Gastelum rancho; as late as 1870 the rancho's population was but two persons.

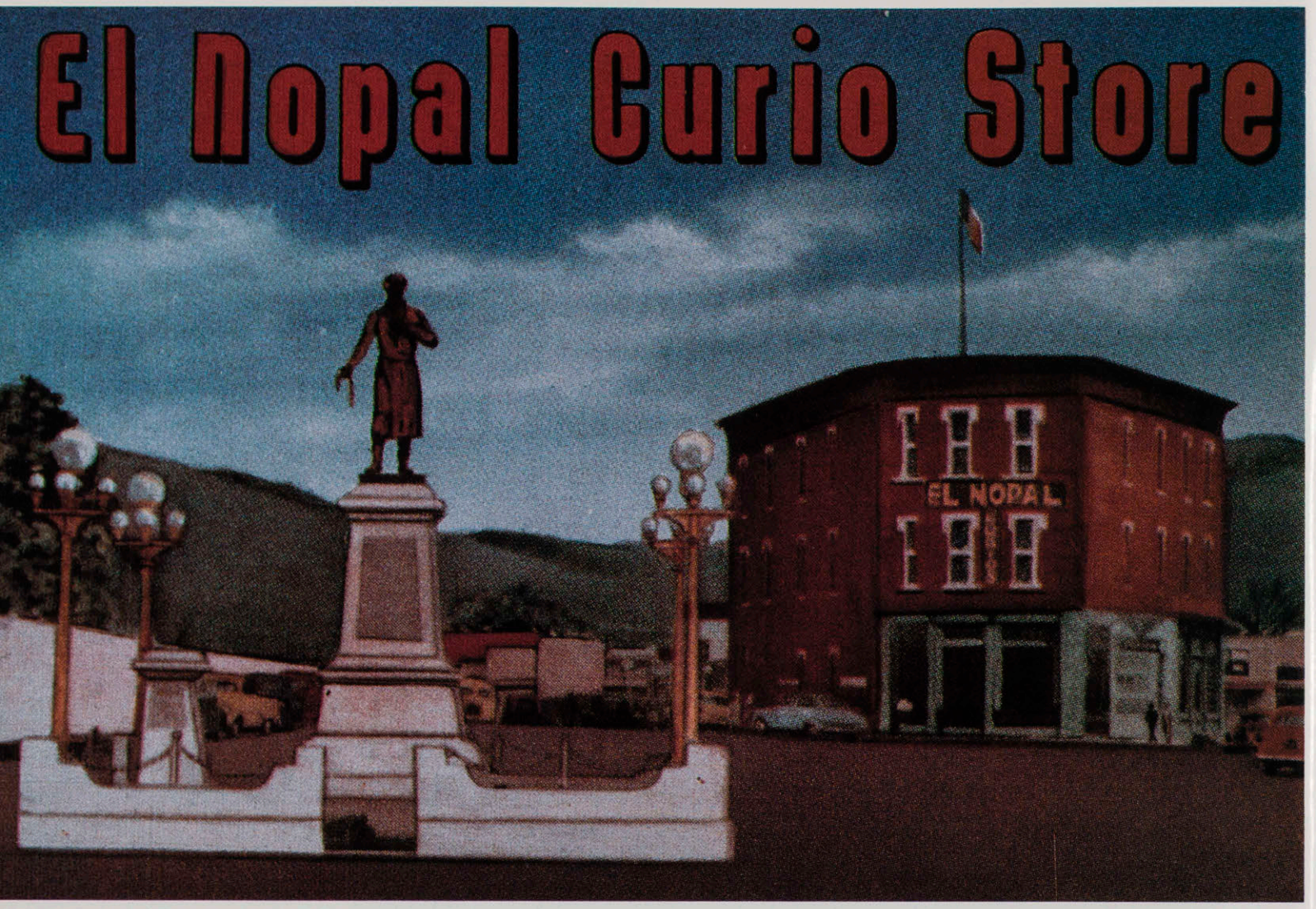
A major change came in 1870, however, when Ensenada became a port of entry for the rich gold strikes at Real del Castillo, thirty miles to the east. Landing at Ensenada was quickly found to be better than approaching the mines by land from San Diego, especially for shipping heavy or bulky items. A warehouse was built on the beach, and a horde of schooners and sloops made regular trips between San Diego, the nearest city of any size, and the entrepôt of the mining region.

Even after a dozen years, however, there were but three or four houses in Ensenada and fewer than 100 people. The establishment of a customs house in 1877 did little to increase the population. Only in 1882, with the removal of the district of northern Baja California's seat of government from Real de Castillo (which had a much larger population than Ensenada) to the port, did the population increase somewhat. The addition of a garrison brought soldiers and their families to the town, and with these new residents and the various governmental functionaries and their families, the population had swelled to about 200 to 300 people by 1885. In January 1885, the soldiers of the garrison revolted because of bad food and suspicions that the captain was holding back soldiers' pay. The army was for a time replaced by rural police, the celebrated constabulary known as *rurales*. As late as 1886 the population of the town remained around 300.

Events of the 1880s outside Baja California had a great deal to do with a sudden increase in Ensenada's size and importance. The enormous expansion in land speculation in southern California, known there as the "Boom" or the "Boom of the 'Eighties," was prompted by a variety of factors, most important of which were the completion of a second railroad line to Los Angeles in late 1885, and the subsequent passenger rate war, as well as boosterism promoting the fine climate of the area. Some of this real estate hucksterism extended to Ensenada.

Another ingredient in Ensenada's sudden growth was a huge concession of land in the northern part of the peninsula by the Mexican government to Luis Huller and his partner, Major George Sisson. As neither Huller nor Sisson had the capital necessary for development, they formed a corporation in Hartford, Connecticut, called the International Company of Mexico. All unoccupied or ungranted lands in the peninsula were in the possession of the International Company, and plans for cities at San Carlos (now Maneadero), Punta Banda, Colnett, and San Quintin were in the works. But the company's first activities centered in Ensenada, and it began construction as early as 1886, enlarging the city at once.

The International Company's assertion that there were but 200 to 300 people in the town of Ensenada prior to January or February of 1887 should be taken with a grain of salt. Activity in the town in the spring of 1886 and later in



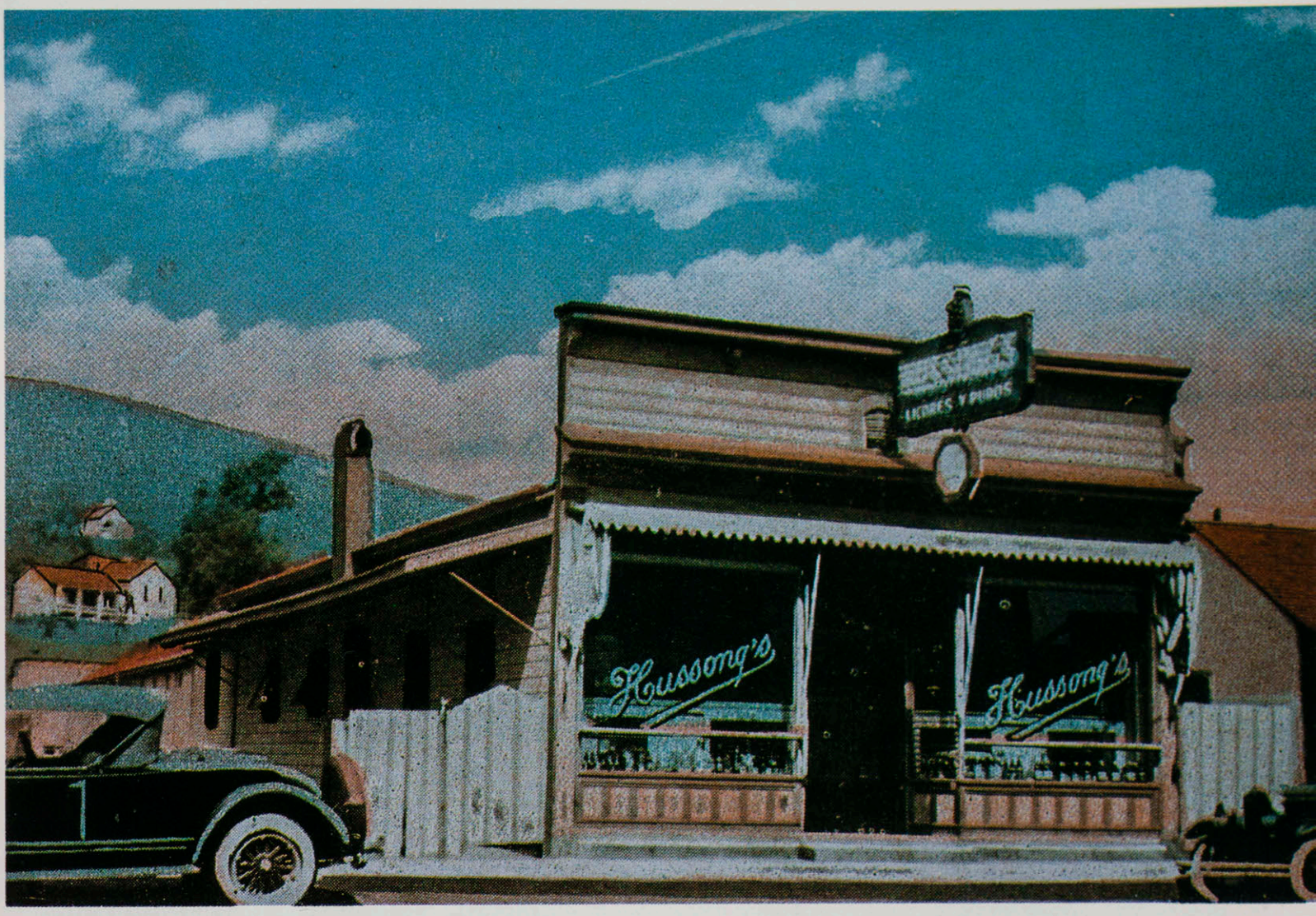
A postcard, dating from around 1952, showing El Nopal Curio Store, the final fate of the Hanbury-Garvey Block. The building was demolished in the 1960s. Photograph courtesy of the José Castañeda Rico Collection.

the year suggests that there was considerable building of new houses and establishment of businesses. Francisco P. Ramirez, for example, built the first two-story structure in the town in 1886, which he later rented to a hotel-keeper. Although the International Company was certainly a catalyst in the growth, Ensenada's development was not solely due to its efforts, as company promotional literature was fond of asserting.

Descriptions of Ensenada during the 1887 boom mention that the streets were dusty, although attempts were made to keep the dust down with a water cart. The town park, located at the present site of Parque Obregon, was freshly planted early in 1887. Two hotels were rapidly built and opened early in 1887—the Pacheco, in February 1887, and the Bay View, completed in the spring of that year. But one visitor to Ensenada characterized the town, given its newness and growing pains, as "like all new places, crude, dirty, and uninviting." Progress during the year was nevertheless still impressive. By August 1887, the population was estimated at 1,500, of whom 1,000 had arrived since January 1; there was a cannery, planing mill, brick yard, the two hotels, and several stores. Two newspapers, both weeklies, were published in town, one of which was in English, the other in English and Spanish.

In September 1887 the boom tempo increased in Ensenada. The Hotel Iturbide, which was the first hotel in Ensenada with pretensions toward luxury, opened on October 13. It had 56 rooms for guests; the smaller Pacheco Hotel had but 27 rooms, and the Bay View, although not so fine as the Iturbide, had 62 rooms. Over fifty houses were under construction, plus a livery stable and a school built to accommodate 300 pupils. Two churches were functioning: the Methodist Church had been built, and Presbyterian services were conducted in the Bay View Hotel. The population, according to the enthusiastic International Company, was increasing at the rate of 100 a week. Steamers ran between San Diego and Ensenada three times a week; the year before they had run twice monthly.

Despite the flagging of the boom in California, in Ensenada activity continued feverishly through the end of 1887. At Second and Ryerson Streets a mattress factory was being built in October, as was a tannery and soap works. Shrubs and trees were planted along the streets, but cattle roaming about found some of the palms so lovingly placed there quite delicious. Before the end of the year Ensenada had no fewer than two



A postcard view of Hussong's Cantina ca. 1925. Along with *La Bufadora* (sea geyser), Hussong's is one of Ensenada's most durable tourist attractions. It was established in 1891 by John Hussong, a German. Photograph courtesy of the José Castañeda Rico Collection.

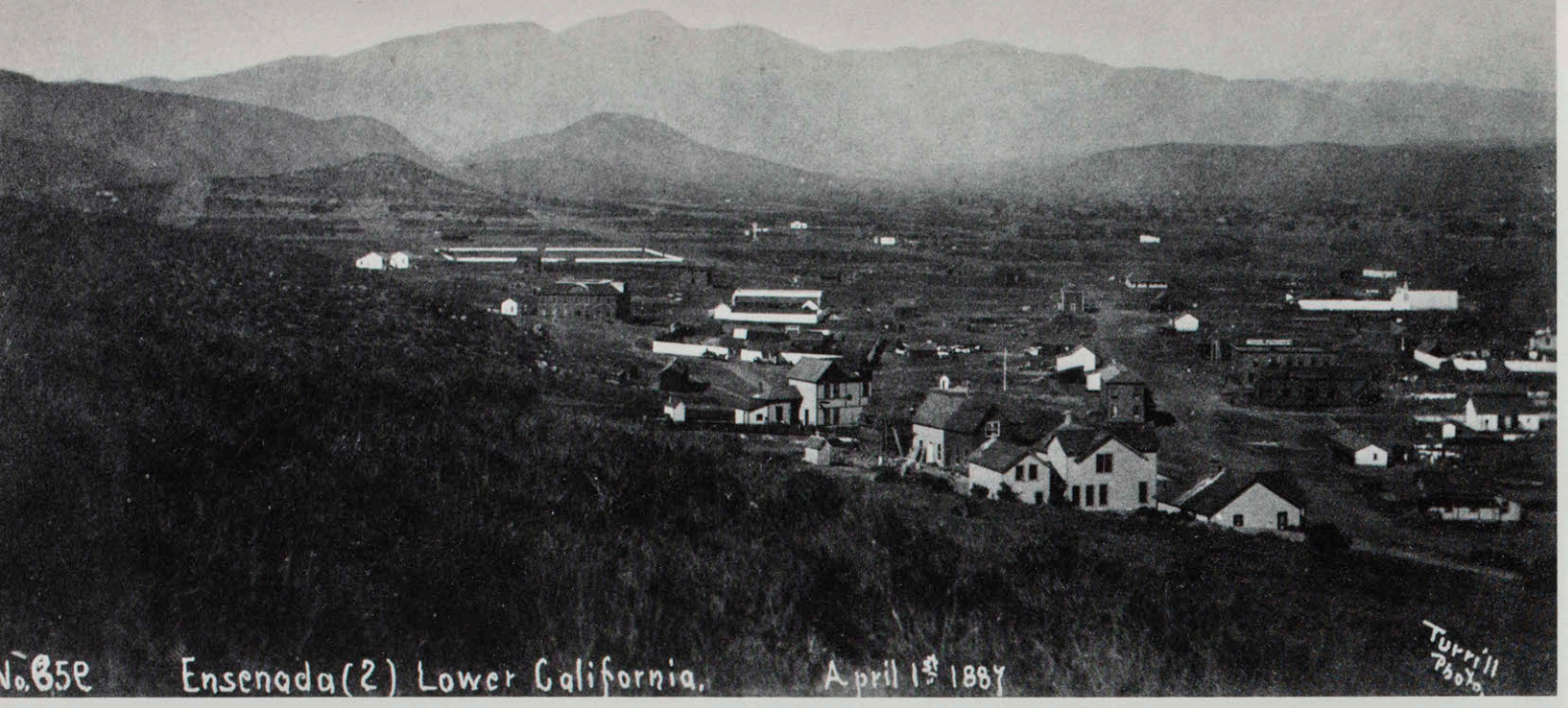
breweries, another sign of progress, although not a very Mexican industry in the nineteenth century. Another necessity of civilization was the sewer line that was put in by December 1887. The Hanbury-Garvey Block, showplace of the city, was completed. Real estate companies continued to do a fair business, although by 1888 in neighboring San Diego County the boom was clearly on the wane.

By the second half of 1888 it was apparent that there was a slowdown in expansion and construction in Ensenada, but efforts to develop the little towns to the south, especially Colnett, continued. A changeover in the government of the northern district of Baja California had a notable impact on the population of Ensenada. George Ryerson, who had lived in Baja California since 1853, had been governor from September 1885 to January 1888. Following his retirement, Luis Torres, a civil servant who had seen service in Sonora, was appointed governor. With the new governor came 100 soldiers and six officers, who were quartered on Gastelum Street in the building that had been occupied by the *rurales*. The latter remained in Ensenada but were moved to a new location near the Bay View Hotel. With the troops came about 30 or 40 wives and a large number of children; as a result of a change in government, then, the population of Ensenada increased by 200 people.

During 1888 some progress was made, to be sure. Plans for a woolen mill were drawn up, the streets were macadamized to eliminate some of the dust, telegraphic and telephone connections with San Diego were made, and electric lights were added to the town's list of improvements. Pilings and lumber for a longer, improved wharf, which was badly needed, arrived in August, and construction began shortly thereafter. The International Company continued to plant trees and sent thousands, including large numbers of olive trees, down from San Diego. Much of the new greenery was planted outside Ensenada in the company's smaller settlements to the south, but some shade trees were planted in the town.

In 1888 a group of men, mostly Americans and a few Englishmen, began to plot the "independence" of Baja California; their goal was probably annexation to the United States. Exposure by San Diego and Los Angeles newspapers quickly frustrated the plans for the revolt, and the plotters were obliged to shelve their scheme. The International

(Continued on page 11)



Two views of Ensenada taken during and after the building boom. The photograph above, taken April 1, 1887, shows the town shortly before the construction of the Hanbury-Garvey Block and the addition of many buildings on Avenida Ruiz, which supplanted Calle Gastelum as the town's main street. The view on the right was taken May 5, 1891, showing what was built on Ruiz during the boom. Note Mexican, British, French, and American flags flying in the city. Photograph above from the F. H. Maude Collection, Seaver Center for Western History Research; photograph at right courtesy of the Society of California Pioneers, San Francisco.

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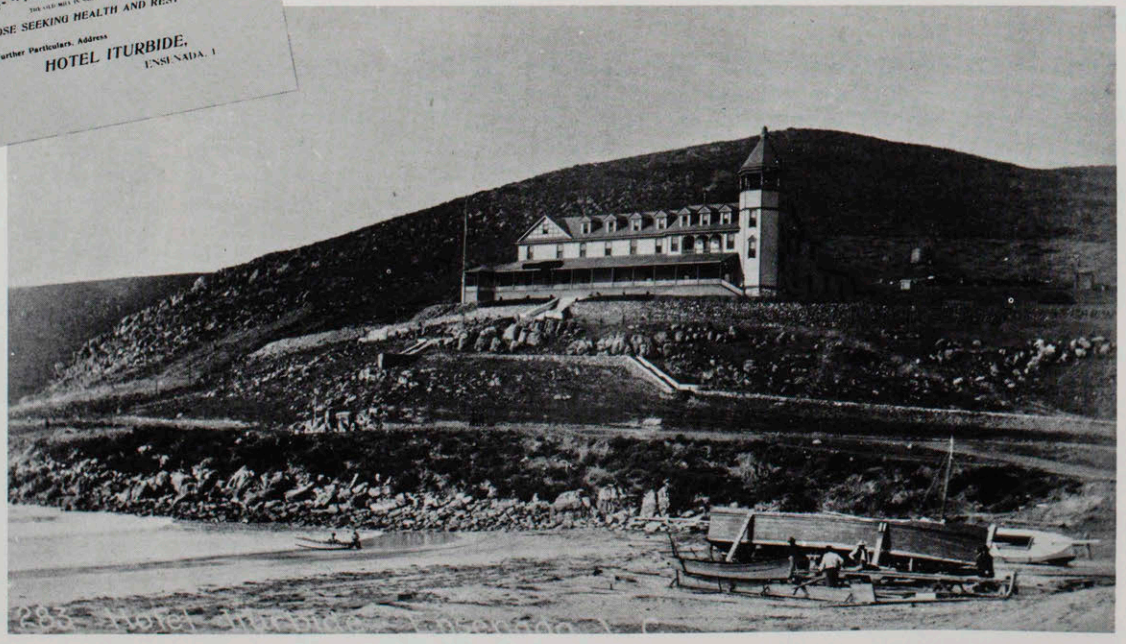
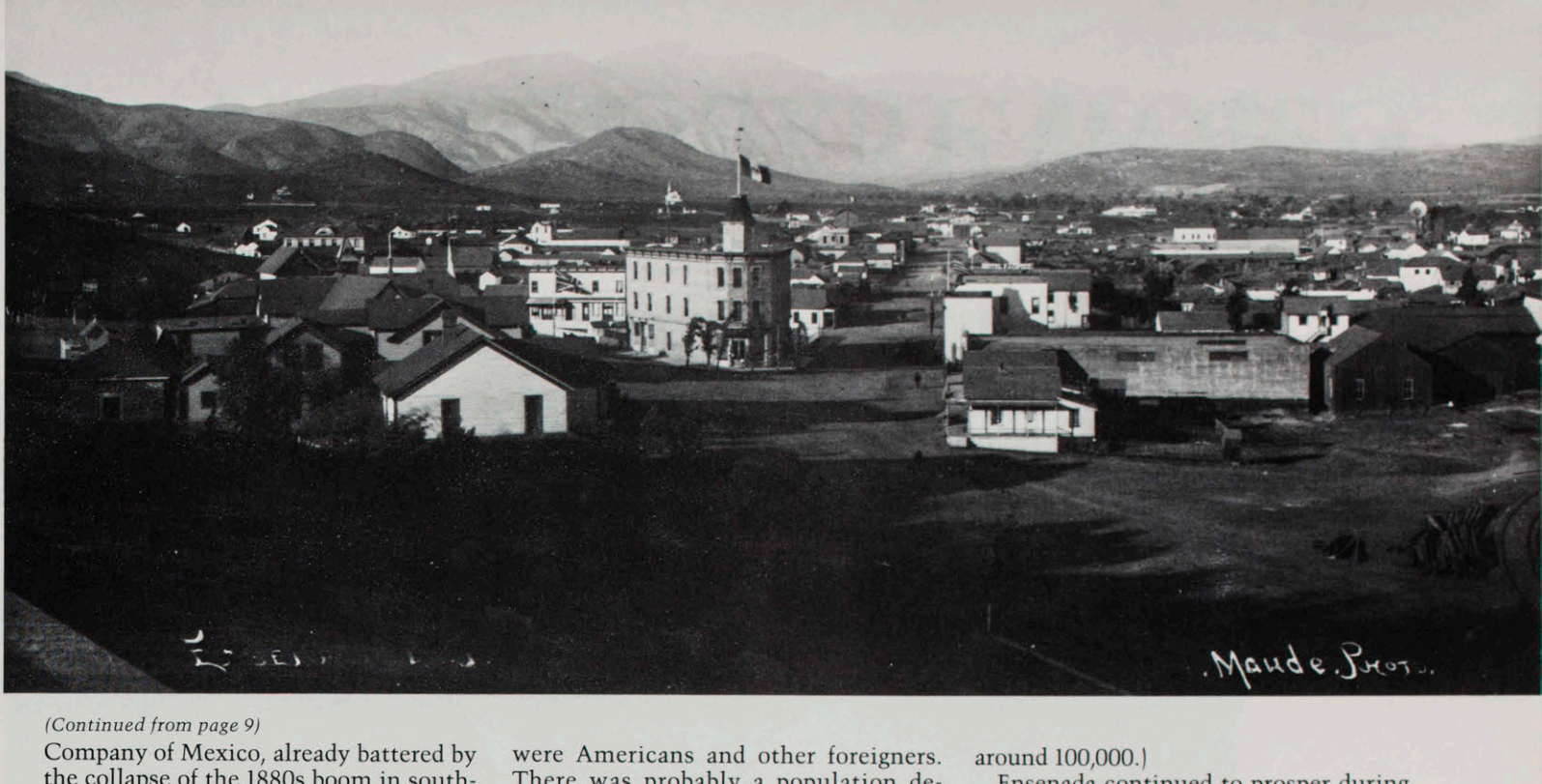
ENSENADA, L

An advertisement in *Baja California Ilustrado* (1899) extolls the charms of the Hotel Iturbide, which opened October 13, 1887. The photograph below shows the "finest hotel in the Republic" and its actual, rather bleak, surroundings ca. 1890. It was destroyed by fire in 1904. Photograph courtesy of the Guildhall Library, London.





(Continued from page 9)

Company of Mexico, already battered by the collapse of the 1880s boom in southern California, its prime source of capital and colonists, was discredited by this plot, which involved some of its directors. A major shakeup resulted, and the company acquired a new board of directors under Major Buchanan Scott.

The towns of southern California were beset by unemployment, economic stress, and consequent lack of population at the end of the 1880s boom. (Some of the towns created by the boom of 1886–88, such as Verona, Terracina, Tarragona, and Hesperia, literally dried up and blew away. Others, such as Glendale, however, are still thriving.) Ensenada had more potential and resources than such fragile boom creations, but it is entirely possible that a major population loss would have resulted had not another factor saved the town.

Late in 1888, mining explorations by Rafael Lopez and Basilio Padilla in what was then known as the Santa Clara district began to pay off. The news of their discoveries became general knowledge by February 1889, and a gold rush ensued. Large numbers of Americans from Los Angeles and San Diego, out of work or employed only marginally, readily joined the Mexicans already prospecting at the site. Many men from Ensenada joined the gold seekers, at least for a time, and Ensenada ultimately profited from activity at the rich mines in what came to be known as El Alamo gold district. As the supply point and shipping port for the mines, the town was spared some of the economic ills prevailing in southern California during 1889 after the collapse of the boom. The population even increased slightly during the 1890s.

In November 1887, at the peak of the boom period, the population of Ensenada was estimated to be 1,450, of whom 1,000 were Americans and other foreigners. There was probably a population decrease during the latter part of 1888; nevertheless by 1892, when the Alamo gold rush had had some effect, there were still about 1,500 people estimated to be in Ensenada, a slight increase over four years. In 1895, a special census revealed a population drop of about 10 percent, to 1,259. But the general census of 1900 yielded 1,726 residents and revealed that there had been some gain over the decade. (Ensenada's population is now around 100,000.)

Ensenada continued to prosper during the early years of this century, despite the loss in administrative function when the capital of the northern territory of Baja California was changed to Mexicali in 1915. The little seaside settlement ultimately grew into the large port and tourist city of today.

William Mason is Curator of History at the Natural History Museum of Los Angeles County.

A diverse assemblage of Ensenada's residents displays the fruits of the Todos Santos Bay, including abalone and sheephead, held by the incongruously dressed Englishman, as well as groupers and lobsters. From the Charles Orrico Collection, Seaver Center for Western History Research.

STOWITTS: An American Artist in India

by PRATAPADITYA PAL Photography by Robert W. Packard

Kanikar Aboriginals. 1930, Fresco secco (tempera) painting on canvas, 50″ by 40″. Lent by Elizabeth Hunter Holliday.

Metzakali Street Drama. 1930, Fresco secco (tempera) painting on canvas, 40″ by 50″. Anonymous lender.

Stowitts and Pavlova at the Greek Theater, Berkeley, 1919. Photographer unknown.

In the chapter on the visual arts in the *Vishnudharmottarapurana*, a religious text compiled in India during the Gupta period (A.D. 300–600), King Vajra asks the old sage Markandeya how he can learn to paint. Unhesitatingly, Markandeya informs the eager monarch that he must first learn the art of dancing before he can learn the art of painting. Whether this explicit instruction was followed by Indian artists cannot be determined except by inference. Certainly, Markandeya would have been pleased with American artist Hubert J. Stowitts (1892–1953) who was, in fact, a well-known dancer before becoming a painter.

I was not aware of Stowitts until he was brought to my attention recently by Anne Holliday, the Guest Curator of the current exhibition of Stowitts's work at the Natural History Museum. I can only say that I was stunned by the beauty of his paintings. I cannot think of a better way to celebrate the Festival of India than by reviving this long-neglected American artist's vivid images of an India that Stowitts felt at the time (during the Great Depression) was rapidly disappearing and which, alas, for me has almost vanished.

Indeed, "Vanishing India" was the title of an exhibition of 150 of his canvases that traveled across America in the early 1930s. Beginning in Calcutta at the Government Museum in the early "season" of 1931, Stowitts's remarkably life-like and sometimes life-size studies of Indians from maharajas to methars (sweepers) were seen by millions in European cultural capitals and American cities from coast to coast. Certainly, in 1931 at the Los Angeles County Museum in Exposition Park, it was a "blockbuster" even by today's standards; people stood in line for admission.

The exhibition also was critically acclaimed. Arthur Millier, the *Los Angeles Times* critic, wrote in 1931, "In one hour with these paintings one learns more about India as a real land of real people than any book or motion picture or series of photographs could convey."

How spellbound art experts on both continents were with Stowitts's astonishingly perceptive and empathetic portraits of Indians is evident from the following tribute by his British colleague, William Rothenstein, the Royal Academician:

> Nowhere have I seen a truer, a more forceful and convincing rendering of the faces, figures, dress, ornaments of Prince and peasant, ascetic and fakir, Rajput warrior and Bengali youth, craftsmen and gypsies, musician, merchant, mendicant and mummer. Mr. Stowitts paints extremely well, and indeed he draws everything with the clarity and detail needed for the illustration of a scientific or medical work, and I marvel at his industry.

My own knowledge of Stowitts's life is extremely sketchy, and I am looking forward to the biography being written by Anne Holliday. It should make fascinating reading for, while Gauguin gave up a lucrative career in the financial world to become a painter, no one else to my knowledge discarded the ballet shoes at the height of his stardom to take up the paint brush.

From his biographer's notes we learn that none other than the celebrated Russian ballerina Anna Pavlova "discovered" Stowitts during his senior year at the University of California (Berkeley) in 1915 at a performance of one of his college dance extravaganzas.

(Continued on page 19)

Stowitts and Pavlova dancing in *La Peri*, Buenos Aires, 1919. Stowitts choreographed the dance and designed the costumes. Photographed by Van Riel.

STOWITTS
1930

NATURAL HISTORY MUSEUM

MEMBERS TRAVEL PROGRAM

1987 Tour Schedule

Los Angeles County
NATURAL HISTORY MUSEUM
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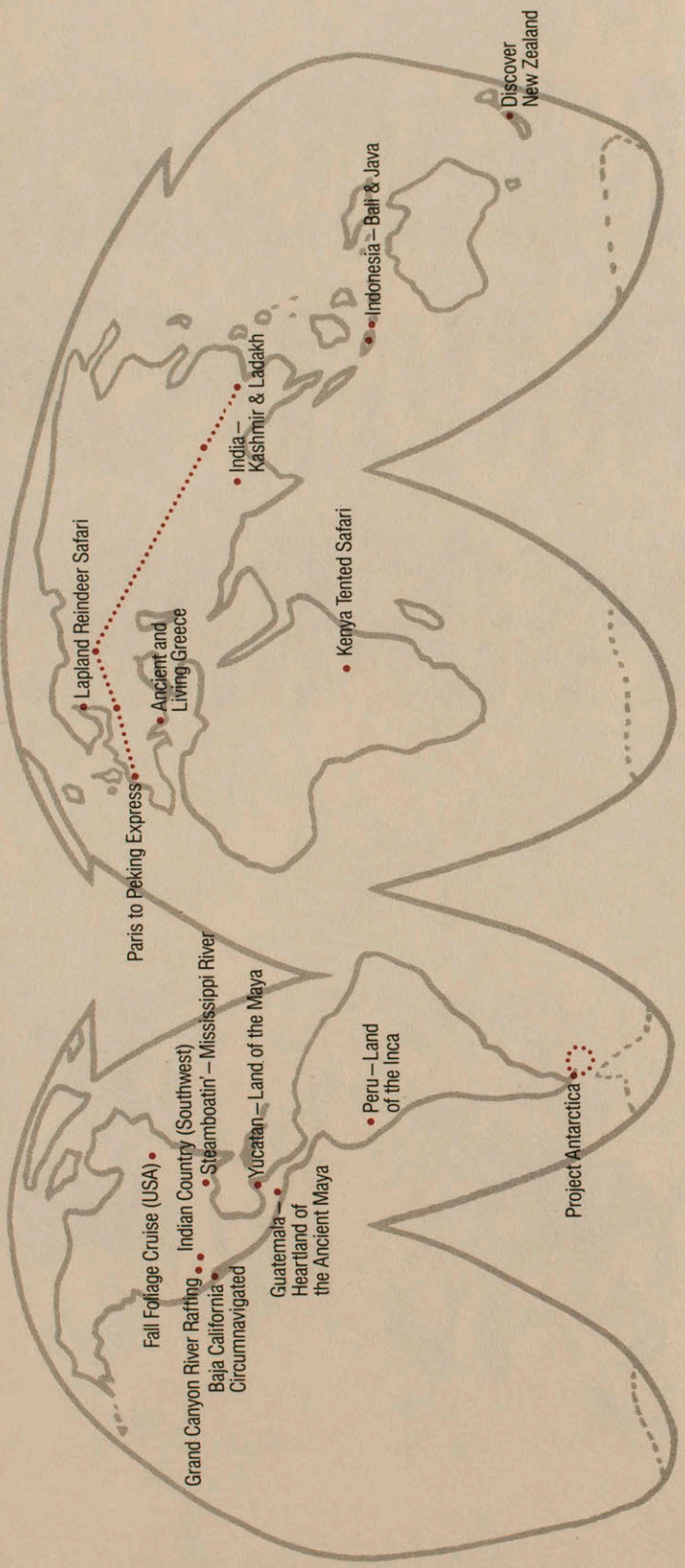

Discover New Zealand
Indonesia – Bali & Java
India – Kashmir & Ladakh
Kenya Tented Safari
Lapland Reindeer Safari
Ancient and Living Greece
Paris to Peking Express
Fall Foliage Cruise (USA)
Indian Country (Southwest)
Steamboatin' – Mississippi River
Grand Canyon River Rafting
Baja California Circumnavigated
Yucatan – Land of the Maya
Guatemala – Heartland of the Ancient Maya
Peru – Land of the Inca
Project Antarctica

Dear Member,

We are proud to present some very special opportunities to discover and explore more of your world.

This assortment of tours offers something for every taste, budget, and time schedule—educational vacations close to home or more exotic foreign tours; tours active or leisurely, brief or extensive, inexpensive or luxurious.

We put together these tours based on the suggestions you gave us in travel surveys over the past two years. And our tour operators for 1987 have been carefully chosen from among the very best.

Accompanying you on each tour will be an experienced tour guide to handle logistics, as well as a museum representative or expert to help you learn about the natural history or culture of the area. You'll also enjoy your fellow travelers, who will share many common interests— many have become lifelong friends!

You'll find some of the shorter tours, now in the planning stages, listed here. Your early response will help determine when and how many of these we will offer in 1987. One-day local trips are also offered by our Education Department (for information, please call 213/744-3534).

Join us as we step into the unknown, reach into the past, and explore other worlds of people and nature. The world is within your reach!

Yours for adventure,

Craig C. Black
Director
Natural History Museum

P.S. Please use the coupon on the back page to request more information on any tour, or call Rebecca Chapman, Director of Membership at 213/744-3426.

All tours, dates, and prices subject to change. Those expressing interest in any trip will automatically be informed as soon as possible of any changes. For the safety and comfort of our members, we will make any adjustments necessary to the travel program due to world events.

GUATEMALA

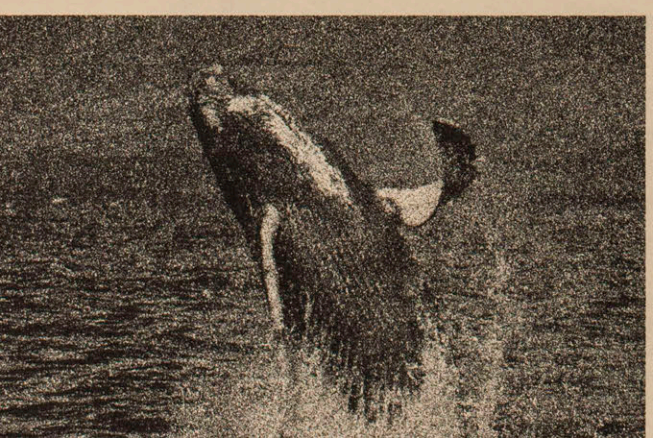
Heartland of the Ancient Maya: January 9–24, 1987.

Waitlist only!
If interested, please use the coupon to inquire.

BAJA CALIFORNIA

Circumnavigated: Among the Great Whales: Jan. 30–Feb. 13.

We invite you to spend 15 days exploring one of the world's great aquaria in an area where the rarest species is the human being—Baja California. We begin at the northern end of the Sea of Cortez—"the richest sea of the world." Traveling with several naturalists, our shallow-draft ship will weave its way through the coves and inlets along the coast, seeking out dolphins, elephant seals, ospreys, sea lions, and many kinds of whales, including the largest creature ever to inhabit the Earth: the legendary blue whale. Half or more of the Northern Pacific's population of gray whales have collected every winter for over 100 years on our route, the mothers seeking out the placid lagoons to breed, give birth and nurture their young. Past tour participants have been able to come face to face with, and even touch, these gentle creatures. Join us on another extraordinary experience. Special Expeditions. From $3,200.



LAPLAND

Reindeer Safari: March 12–20.

Imagine gliding silently along the pure white sparkling snow of the Lapland wilderness, part of a reindeer caravan led by a Lapp guide—stopping at a wilderness hut for lunch and hot coffee. On this trip, you can help set up a traditional teepee, learn Lapp lariat throwing, be entertained with the singing of traditional "joika" songs, and learn "Pilkki"—fishing through an ice hole in Lake Muotka. Get your Reindeer Drivers License and a certificate to prove you have crossed the Arctic Circle. Enjoy lunch in a Lapp home, and take time to get to know these friendly people. Each night in your charming and comfortable lodge, you can relax in an authentic Finnish sauna. Our trip ends with a visit to Helsinki, Finland's cosmopolitan seaside capital, where shopping is a delight and dining is at its best. Finnair. $1,949 including airfare.

Discover
NEW ZEALAND:
April 10–25.

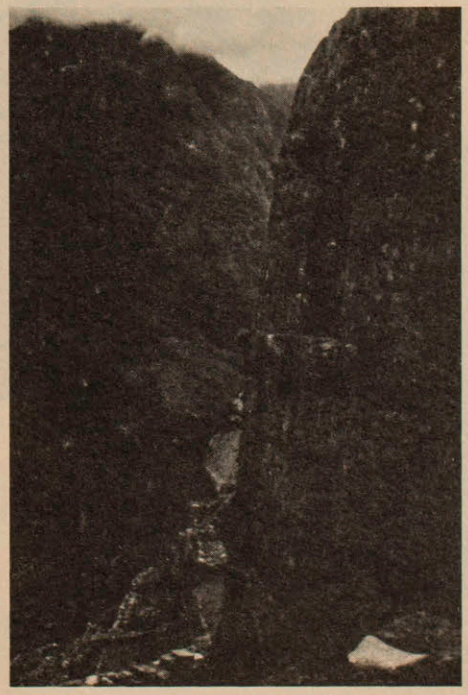
After the enthusiastic response to the New Zealand portion of our 1986 South Pacific tour, and in response to your requests, we now offer a very special exploration of the rich cultural and natural history of this beautiful country. From the picturesque city of Auckland on the North Island, we will drive leisurely through rolling farmlands and kiwifruit plantations en route to the glowworm caves at Waitomo and the geothermal area of Rotorua—the center of traditional Maori culture in New Zealand. On the South Island, we visit the lovely English city of Christchurch, and spend two days exploring the magnificent scenic beauty of Mount Cook National Park. At picturesque Lake Wanaka we enjoy a special homestay with local friends before continuing to quaint Queenstown. We round out the trip with a spectacular boat ride through the Milford Sound in Fjordland National Park and an exploration of the abundant marine wildlife on the Otago Peninsula. One of the special features of this tour is the opportunity to meet, travel and visit with many New Zealand friends and associates of our tour guides, Tom Peirce of High Country Passage, and Judy Chovan, our own Science Education Specialist. $2,535 plus airfare.

INDIAN COUNTRY
Arizona and New Mexico: tentatively planned for April.

If interested, please use coupon to inquire.

PERU *Land of the Inca:*
May 13–26.

Join us as we explore the fascinating pre-Columbian history of this diverse country, including the incomparable Inca citadel of Machu Picchu in the Peruvian highlands. Our expedition will also investigate the world-famous Nazca lines in the southern desert of Peru, and the incredible adobe brick city of Chan Chan—considered to be the largest of its kind in the world. Other highlights include a boat trip to the Ballestas Islands to see an abundance of birds and marine life, a tour to the Inca fortress of Ollantaytambo in the magnificent Urubamba Valley, and a visit to the native highland market of Chinchero. Our accompanying anthropologist will help us gain an understanding of Peru that is not possible with traditional tour programs. High Country Passage. $2,225 plus air.

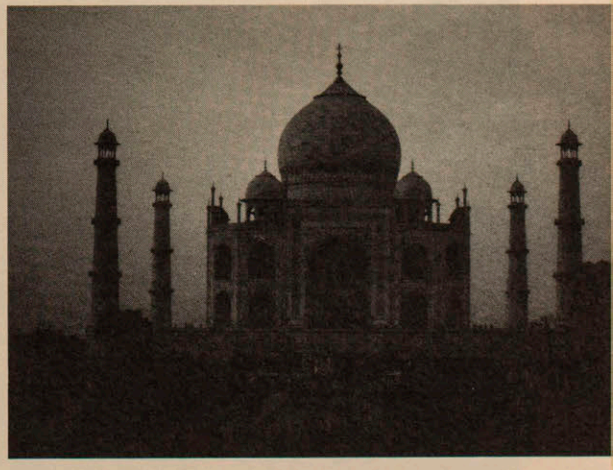


Indonesia—The Islands of
BALI *and* JAVA:
June 7–27.

Join our very special in-depth land tour to the fascinating world of Indonesia. Java, the larger island, offers more than just tropical beauty—its ancient temples record the evolution of religious life on the island, from Buddhism to Hinduism to Islam. Bali, however, has remained Hindu and its culture has evolved in a strikingly different direction. It is a magical land of art and artists, beauty and ritual. The Balinese have developed a unique religion characterized by exotic rituals, festivals and ceremonies—from the entranced dances of the sanghyang to the pulse and rhythm of the mysterious kecak dance. Bali and Java hold an allure for visitors that few places can match. Our tour of these two wondrous islands also includes the vibrant Asian capitals of Singapore and Hong Kong. High Country Passage. $2,285 plus airfare.

INDIA *with Kashmir and Ladakh (Little Tibet): July 9–28.*

The incomparable and awe-inspiring Taj Mahal, truly one of the wonders of the world, will be only one of the highlights of this exotic members' tour. In the princely state of Rajasthan, we will stay in a former Maharajah's palace and visit the fabled Amber Palace, an ancient astrological observatory, and the Palace of the Winds. Then we'll relax on one of Kashmir's famed houseboats as we explore Srinagar and the beautiful Vale of Kashmir. After acclimating ourselves to this Himalayan retreat, we will drive one of the world's highest roads to Ladakh, the most remote region of India. Often called Little Tibet, the moonland, or the last Shangri La, Ladakh is on the Tibetan plateau, north of the Himalayas. The culture and religion here lead many to say that Ladakh is now more Tibetan than Tibet itself. From the monsoons of Delhi and the desert, to the lush hill retreat of Kashmir, to the stark mountain villages of Ladakh—and from Hindu cities to Muslim Kashmir to Buddhist Ladakh—this trip offers unimaginable variety and adventure. Abercrombie & Kent. $2,695 plus airfare.

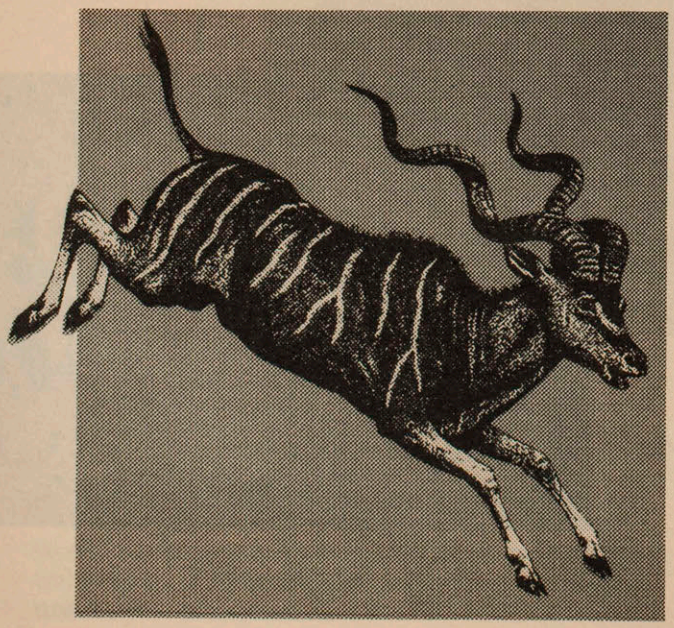


NORTH AMERICAN EXPEDITIONS

Tentatively planned for June and August; members would participate in archaeological and paleontological projects in North America. If interested, please use coupon to inquire.

KENYA *Tented Safari: August 7–25.*

Always a favorite with our members, Kenya offers wildlife and birdlife that cannot be matched anywhere else on earth. We begin our tour in Nairobi at the famous old colonial landmark, the Norfolk Hotel, and journey on to our private camp in Amboseli National Park at the foot of Mt. Kilimanjaro. There for two days, we will watch for rhino, giraffe, elephant, wildebeest, lion and cheetah. In Aberdare National Park, we'll stay at The Ark, situated over a natural waterhole, where elephant, rhino, buffalo, giant forest hog, and possibly the rare bongo antelope come down to drink. We will relax for a day at the Mount Kenya Safari Club and then visit the Samburu Game Reserve, Lake Baringo, Lake Nakuru National Park, and the Masai Mara Game Reserve, staying in tented camps. The breathtaking scenery and overwhelming wildlife will make spectacular opportunities for the photographers in our group. Note: An optional extension to Rwanda will take us for a close look at the mountain gorillas. Abercrombie & Kent. $2,250 plus airfare.



PARIS TO PEKING
Express: September 5–28.

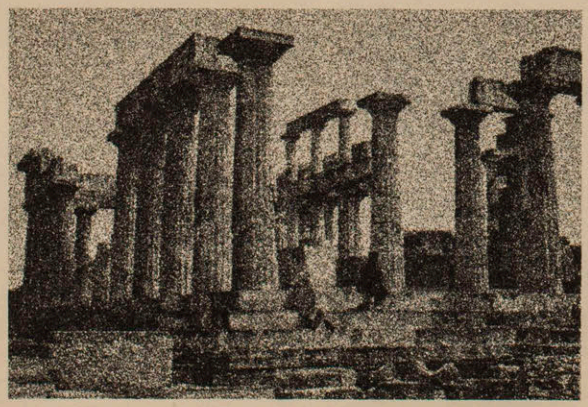
This extraordinary journey across the vast Eurasian continent to the Far East offers a rare chance to experience many diverse cultures in comfort on board private rail cars. Expert lecturers accompany us on fascinating off-train adventures all along the way and lead informative discussions on board. Highlights of the remarkable experience include a private Chopin concert in Warsaw, an excursion to Lake Baikal—the world's deepest freshwater lake, a stay in a yurt camp on the Mongolian steppe, and the cultural riches of Paris, Moscow and Peking. This is our most far-reaching and luxurious trip of the year, and the adventure of a lifetime. Society Expeditions. $4,990 plus airfare.

GRAND CANYON
River Rafting: September 6–12.

After six years of members' expeditions to the Grand Canyon, this trip has become quite a tradition. Our float down the Colorado River between the awesome canyon walls is not a white-water trip, but offers untold adventure just the same. Our naturalist will help us learn about the geology, wildlife, and natural history of the Grand Canyon through day hikes and talks around the campfire. And now we've added studies on the archaeology and primitive technology of the area. Learning more about the people of the Canyon and how they survived here will add a new dimension to an already fascinating trip. In 1986 this tour sold out almost immediately, so we advise early registration for 1987. Wilderness Studies. $560 including trainfare.

The Splendors of Ancient and Living GREECE:
October 12-23.

When our members returned from Greece in November of 1985, their response was "Let's go again soon!" They also suggested that we add a cruise to the islands, so we've done that. Our itinerary includes three nights in Athens, with visits to the Acropolis, the National Archaeological Museum, and more. Then we'll take a four-day classical tour including Olympia, Delphi, and Nauplion. Our four-day cruise will include visits to picturesque Mykonos, Crete, Santorini (perhaps the site of the lost city of Atlantis), Patmos, and Kusadasi in Turkey, where we'll visit Ephesus. A highlight in Rhodes will be an excursion to Lindos, an entire city officially designated as an archaeological site, noted for its Byzantine and Arabic influences. Combine the historic importance of ancient Greece with its lovely olive trees, the mountaintop birthplace of the Greek gods, and whitewashed villages perched above the cobalt blue waters of the Aegean, and this is another trip not to be missed. Hellastours. From $1,099 plus airfare.

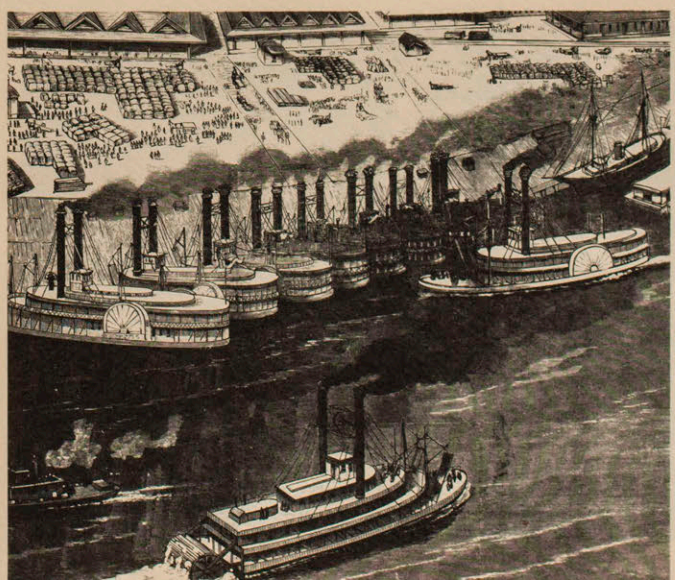


FALL FOLIAGE CRUISE *tentatively planned for October.*

If interested, please use the coupon to inquire.

Steamboatin' on the MISSISSIPPI RIVER:
November 16–22.

The days of steamboatin' were full of rip-roaring adventure, romance, and legendary exploits. At one time over 11,000 paddlewheelers plied the Mississippi and Ohio rivers carrying Southern belles, diamond-studded gentlemen, traders, trappers and guntoting gamblers. The rivers carried cotton, sugar cane and other goods, as well as recipes, music, customs, fashions and new ways of life to the growing cities along the banks. Our four-day cruise on the luxurious and authentic steamboat, the Mississippi Queen, includes shore excursions to antebellum mansions, Southern plantations, and historic battlefields. Next we'll spend two nights exploring exciting New Orleans, with its quaint shops, famous French Quarter, and the sounds of Bourbon Street jazz. Delta Queen Steamboat Co. From $1,189 including airfare.



YUCATAN:

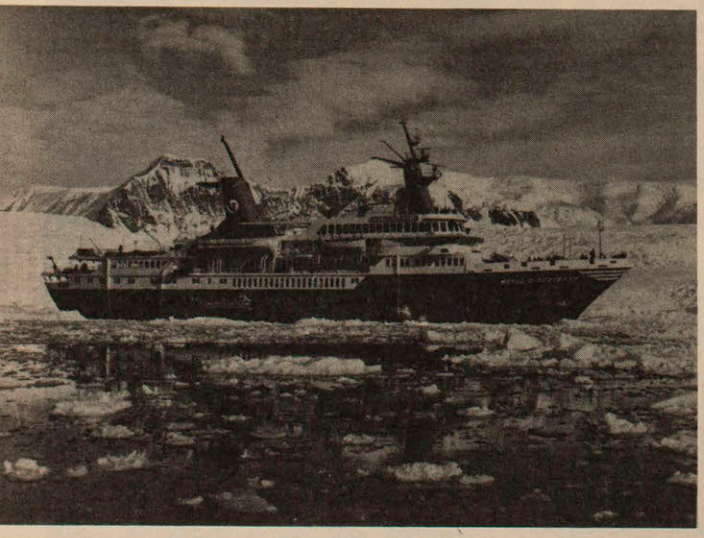
Land of the Maya—tentatively planned for December.

If interested, please use the coupon to inquire.

Project ANTARCTICA:

Jan. 9–22, 1988.

Antarctica is the last and most glorious frontier on earth; splendid beyond description, and quite unlike any other region in the world. We'll find whales and seals in rich variety, giant albatross and cormorants, and rookeries of squawking, waddling, sociable penguins. We will witness the calving of glaciers, and visit scientific stations established here by a half-dozen countries, where we'll learn what life is like for these isolated researchers. Inflatable outboard Zodiacs will take us to land on remote shores where perhaps only seals have landed before us. From Puerto Williams, Chile's southernmost town, we'll travel to Cape Horn, cross historic Drake Passage, explore the Antarctica Peninsula, and retrace the route of Charles Darwin through one of the most scenic fjords in the world in the Straits of Magellan. Join us on this tour of a wondrous and majestic continent. Society Expeditions. From $3,990 plus airfare.



RESPONSE FORM

Send this coupon for more information on any trip to:

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☐ I am ☐ I am not a member of the Natural History Museum.

☐ I have traveled with the Museum before.

To:_____

Dates:_____

☐ I have not yet traveled with the Museum.

Please send me information on the following 1987 tours:

☐ Guatemala—Heartland of the Ancient Maya. January 9-24, 1987. (waitlist only)

☐ Baja California Circumnavigated. Jan. 30-Feb. 13, 1987.

☐ Lapland Reindeer Safari. March 12-20, 1987.

☐ Discover New Zealand. April 10-25, 1987.

☐ Indian Country (Southwest). April 1987.

☐ Peru—Land of the Inca. May 13-26, 1987.

☐ Indonesia—Bali & Java. June 7-27, 1987.

☐ North American Expeditions. Summer 1987.

☐ India—Kashmir & Ladakh. July 9-28, 1987.

☐ Kenya Tented Safari. August 7-25, 1987.

☐ Paris to Peking Express. Sept. 5-28, 1987.

☐ Grand Canyon River Rafting. Sept. 6-12, 1987.

☐ Ancient and Living Greece. Oct. 12-23, 1987.

☐ Fall Foliage Cruise (USA). Oct. 1987.

☐ Steamboatin'—Mississippi River. Nov. 16-22, 1987.

☐ Yucatan—Land of the Maya. Dec. 1987.

☐ Project Antarctica. Jan. 9-22, 1988.

Other trips I am interested in: _____

_____

☐ Please send info on 1-day trips.

FOR FUTURE REFERENCE,
PLEASE PULL OUT THIS
HANDY REFERENCE GUIDE
TO 1987 MEMBERS' TOURS.

His Highness the Maharajah's Camel. 1930, Fresco secco (tempera) painting on canvas, 50″ by 60″. Anonymous lender.

In the autumn of 1931, the Los Angeles County Museum in Exposition Park hosted an important exhibition entitled Vanishing India. The exhibition already had won wide acclaim in Europe, New York, and Chicago for its vivid and detailed recording of a rapidly changing society. It was the one-man show of artist Hubert J. Stowitts, who preferred to be known simply as "Stowitts."

Los Angeles newspaper accounts from the time tell us that the exhibition, consisting of 150 large paintings, was the most significant exhibit devoted to one artist in the museum's history. The exhibition was so popular that people lined up for blocks in Exposition Park to get a glimpse of the spectacular paintings. At the exhibition's opening reception some of Los Angeles's most notable patrons were listed as offical hostesses. This list contains many names that are still familiar to us...Banning, Booth, Balch, and Chandler, among others.

The Natural History Museum of Los Angeles County is very honored to have the opportunity once again to bring Stowitts to the people of Los Angeles. This exhibition, some 55 years after our first Stowitts show, is somewhat smaller, but no less elegant and important. We are indebted to Anne Holliday, Guest Curator of the exhibit, for making the exhibition possible and for her selection of the 35 Stowitts paintings that are included in the exhibit. These undoubtedly are some of his most important works. It is significant, perhaps, that these 35 paintings will be hung in the original Rotunda of the museum. This Rotunda is considered by many of us to be the grandest area of the museum, and it is where much of the 1931 Stowitts exhibition was hung; a most fitting modern setting for a heretofore neglected genius.

Dr. Craig C. Black, Director
Natural History Museum of
Los Angeles County

The Heritage of India by Stowitts opens October 3, 1986, and runs through January 18, 1987.

(Continued from page 15)

For six years thereafter Stowitts toured the world with Pavlova and ultimately became her only American dancing partner. He not only danced but designed the sets and costumes of the troupe and, according to Arthur Millier, "introduced a new freedom into the academic technique of the Russian ballet." L. E. Moi, dance critic for *Augusta: Reviste de Arte* (Buenos Aires), wrote in 1919:

> It is not often that one encounters the singular dualism, so to speak, that Mr. Hubert Stowitts offers with his interesting designs for *La Peri*, the pantomime conceived by him and executed subsequently with that incomparable sorceress of the dance known as Anna Pavlova....The daily reviewers welcomed with unanimous applause this original interpretation of the theme by Paul Dukas which the two famous dancers premiered to an enthusiastic public....The stage setting for *La Peri* could pass as an archetypical achievement of the true Russian ballet. The young artist has thus placed himself at the height of the best contemporary designers [translated from the Spanish by Dr. Lynn Garafola].

Pavlova visited India in 1922, shortly after Stowitts left her company and settled in Paris to pursue his painting. Pavlova was impressed by the Buddhist murals at the cave temples of Ajanta and decided to create a ballet called *Ajanta Frescoes*. Dissatisfied, however, with the efforts of her choreographer, Ivan Clustine, she commissioned young Uday Shankar (eldest brother of well-known Indian musician Ravi Shankar), who was an art student in London at that time, to design and create two ballets that would be more authentically Indian. While Shankar gave up the brush and easel for the stage, Stowitts did precisely the opposite.

Left: Artist Stowitts posing in front of his painting, His Highness the Maharana of Udaipur (1929, Fresco secco painting on canvas, 80" by 60", lent by Carol Rodgers and Thomas Swales) during the 1931 run of his exhibition Vanishing India at the Los Angeles County Museum (now the Natural History Museum of Los Angeles County).

Stowitts established a studio in Venice, and his growing reputation as a portrait painter brought increased demands from the European aristocracy and literati for sittings. In 1927 the artist left for the island of Bali and ended up in Java. From Java, he traveled to Calcutta, where he spent three frustrating months seeking official approval from the British Indian Government for an exhibition of his Javanese paintings. Fortunately, following that triumph over bureaucracy and subsequent exhibition of his lavish paintings produced at the royal courts of Java, he met an influential maharaja.

For the next two years Stowitts traveled from one princely state to another. Although he painted some splendid life-size portraits of maharajas, luckily for us, Stowitts was more democratic than most of his contemporaries. He was interested in all kinds of people and, obviously, portraiture was his forte.

With the rapid encroachment of the age of machines, he was genuinely concerned about the demise of craftsmanship and went out of his way to paint simple men and women engaged in their various tasks. American art historians more competent than I will discuss Stowitts's place in the mainstream of American art, but he was uniquely gifted in his flawless technique, love of details, and brilliant sense of colors. In fact, as a colorist, he seems to have employed the traditional Indian artist's preference for placing his figures against a neutral background, or with the slightest suggestion of background.

Stowitts's characterizations of subject are among the most truthful I know of. One cannot fail to recognize that his figures and faces, costumes and jewelry, have the same sense of probity and scrupulousness encountered in the works of the great Mughal masters. He must have seen many wonderful Indian paintings and sculptures when he visited the maharajas' palaces and many temples. In Venice he had admired the works of Titian and Tintoretto, but it is significant that he chose to portray his Indian subjects in tempera rather than oil. Although less versatile than oil, tempera was much more suited to creating the rich tonality of Indian colors. Stowitts's skill in this medium must be regarded as unequaled among his contemporaries.

Stowitts considered his India paintings to be an "ethnological record" rather than "art." For almost two centuries before Stowitts, European artists had been painting ethnographic records of India. In fact, so great was the demand for ethnographic pictures in the first half of British rule in India into the middle of the nineteenth century, that even Indian artists were trained to produce such pictures.

After the Mutiny of 1857, when the British attitude toward India became openly imperialistic and India became more familiar, the enthusiasm for such ethnographical pictures waned. Curiously, interest in Indian ethnography had already been expressed by the early Yankee traders who sailed to India as early as the 1780s. Much of the material they brought back is housed today in the Peabody Museum in Salem, Massachusetts. But interest was limited, and no early American artist is ever known to have gone to India, although such artists as Mather Brown (1761–1831) did paint Indian subjects in England.

Hubert Stowitts, therefore, remains unique among American artists — both for his remarkable talents as well as for his international viewpoint. It is particularly gratifying to see this revival of interest in his exquisitely crafted, luminously colored, and spiritually exhilarating portraits of unknown Indians engaged in their humble crafts.

Alas, like many of the artisans so engagingly and so lovingly documented by Stowitts, good craftsmanship itself is becoming a thing of the past, whether in industry or in the arts. Stowitts's pictures, therefore, are a heritage not only of India, but also of America.

Dr. Pratapaditya Pal is Senior Curator of Southeast Asian and Indian Art at the Los Angeles County Museum of Art. *This article is reprinted with permission from* The Heritage of India by Stowitts, *published by Packard Editions, Carmel-by-the-Sea, California.*

Phalaenopsis buyssoniana

ORCHIDS IN WATERCOLOR

A RETROSPECTIVE OF PAINTINGS BY GWEN FRANCIS ANTHONY

The Natural History Museum is pleased to present an exhibit of watercolor paintings of orchids by Gwen Francis Anthony. This is the first exhibit of her work in southern California, although her art has been reproduced on note cards and as serigraphs and lithographs.

The late Mrs. Anthony was a graduate of Otis Art Institute. After early jobs in sculpting and map drawing, she moved to Jamaica in the early 1960s. The profusion of orchids native to the island kindled her interest in painting them. She painted a wide variety of subjects ranging from such unusual species as *Phalaenopsis buyssoniana* to the striking *Dendrobium aggregatum* (pictured here), some of which were reproduced in *Orchid Digest* during the 1970s. She is also represented in the archives of the Hunt Institute for Botanical Documentation at Carnegie-Mellon University in Pittsburgh. Other species brought to life by her superb use of watercolor include *Vanda coerulea*, *V. sanderiana*, *Oncidium kramerianum*, and *Brassolva digbyana*, which are among the 35 works on display through January 4, 1987, in the Ground Floor Gallery.

Robert Gustafson
Collections Manager, Botany

Dendrobium aggregatum

THE MIGRATION OF THE MONARCH BUTTERFLY

AN UNCERTAIN FUTURE

by GARY WOLFE and
CHRISTOPHER D. NAGANO

In the Grove. Several miles east of Santa Barbara, a parcel of undeveloped land lies between the ocean and the quiet residential suburb of Goleta. A shady wooded grove on this property provides roost trees for some 80,000 migratory Monarch butterflies during the winter months.

Inside the grove, Jan Schrumpf stands at the foot of a towering eucalyptus tree, pointing out a thick cluster of the butterflies overhead. Schrumpf is a biologist working with The Monarch Project, an international organization active in Monarch protection and management with the specific current task of conserving the overwintering roosts in California. The Monarchs are crowded together, clinging to the leeward side of the tree trunk over forty feet above the ground. Aggregated in other tall eucalyptus trees nearby are ten other clusters of varying size. Motionless, their wings folded together to expose only light-brown underwings, the butterflies blend in well with their surroundings. A casual stroller through the grove could easily pass below the clusters and never suspect such masses of butterflies close by.

Schrumpf leans an aluminum extension ladder against the tree and climbs to the top step, butterfly net in hand. She carefully scoops clumps of Monarchs into her net—about a hundred by her estimate—and descends.

It is late morning and the unusually warm January day is drawing butterflies away from their shaded roosts into the sunny meadow that borders the eucalyptus grove. There, hundreds of beautiful Monarchs flit and soar above the short grasses. Others settle onto the ground to bask or drink from the remaining traces of dew. Schrumpf emerges from the grove with her netted specimens and settles down at the meadow's edge. At this pleasant spot she will spend the next few hours placing small paper labels on the wings of the captured butterflies for the Monarch Project's tagging program.

The technique used for tagging is fascinating; perfected nearly forty years ago by Dr. F. A. Urquhart of the University of Toronto, it is similar to those used to band migratory birds. Schrumpf carefully removes a butterfly from the net and holds the insect in one hand. She gently rubs the forewing to remove a tiny patch of pigmented scales. The scales give color to the wings, and their removal is harmless to the insect. Schrumpf then presses a small adhesive label onto the scale-free area. Consecutively numbered, the labels bear instructions for any finder of the butterfly to mail the insect to The Monarch Project. People of all ages and different walks of life have found or captured tagged Monarchs and returned them to the address printed on the wing labels. Only a small percentage of butterflies are returned (0.7%); therefore, each specimen sent back contributes significantly to the data needed by The Monarch Project.

Schrumpf releases the tagged butterfly; it flies away, unaffected by its newly labeled wing. She records the data and location of the tagging next to a code number matched by that of the label, then reaches into the net for another butterfly.

Biology of the Monarch. The Monarch *(Danaus plexippus)* is probably the best-known butterfly in North America. Its large size, vivid beauty, and wide geographic distribution combine to make it an unusually popular insect. For generations, school children have become familiar with it through its common use in classroom exhibits demonstrating insect metamorphosis. The renown of the Monarch prompted one biologist to call it the "de facto national butterfly."

Nonetheless, the public is much less familiar with the most intriguing aspect of the North American populations of the Monarch: the fact that each fall, millions of these butterflies travel vast distances between their summer and winter habitats. This annual migration is truly one of the grand spectacles of nature. While large-scale movements of certain other insects occur periodically, the Monarch annually completes a two-way migration in great numbers. Indeed, because of the phenomenal distances traveled, its regularity, and its conspicuousness, the Monarch migration compares with the travels of some sea birds and songbirds, or the massive treks of mammals across the Serengeti Plain in Africa.

But the future of this natural phenomenon is highly uncertain. The Monarch requires specific environmental conditions for its overwintering habitat. There is only a limited number of acceptable sites, many of which are being usurped for human uses, such as real estate development, agriculture, and logging. As such sites are altered or removed, their usefulness as wintering cluster sites for the Monarch will be lost.

Monarchs in North America segregate into two general populations according to their migratory routes and winter destinations. The Rocky Mountains roughly divide the eastern and western populations. The larger eastern population travels southward from summer breeding grounds to spend the winter at a limited number of sites high in the mountains of central Mexico. There are eleven such sites recorded, which range in size from one-quarter to twelve acres, and at which the density of Monarchs is estimated to be ten million per acre.

The Monarch Project is presently concentrating its efforts on the western Monarch population, which overwinters at a number of sites along the fog-shrouded coastal lowlands of California. These butterflies range during the warm months over much of the region bounded by the Pacific Ocean and the Rocky Mountains, from southern Canada to the southwestern states. Current investigations, such as The Monarch Project's banding program, will provide more complete information as to the Monarch's summer habitats and migration routes than is presently available.

The western Monarch migrates to inland regions to lay its eggs on milkweed, the larval foodplant. This plant is crucial not only for nourishment but as a source of chemicals, known as cardenolides, that are stored in the body of the insect. These chemicals are poisonous to predators and serve as an effective defense

against the Monarch's enemies, such as insectivorous birds and rodents.

The adult butterflies of the late summer generation feed heavily on flower nectar to build up quantities of internal fat, which are used as energy reserves in the coming weeks and months. As autumn draws nearer, the butterflies begin to make their way southward toward their coastal winter destinations to escape the oncoming inland winter: no stage of the Monarch—whether egg, caterpillar, chrysalis, or adult—is able to survive freezing temperatures. Ample reserves of fat not only make possible the Monarch's long journey but also provide essential nutrient reserves at the final overwintering destinations. There, diminished food sources and cooler temperatures necessitate sharp curtailing of activity. Their energy expenditures are minimized to survive the winter with sufficient fat stores for the spring return migration.

Clustering behavior commences as the migrating Monarchs reach their overwintering grounds in California. Two types of clusters occur in the state: temporary or transient bivouacs that aggregate only for a few weeks in the fall and permanent roosts that remain throughout the winter and at which mating activity occurs prior to the butterflies' dispersal. During September and October, numerous, generally small, temporary bivouacs develop near the coast, especially in areas with abundant nectar resources. Many of these sites are soon abandoned, probably in response to decreased nectar sources, cooler temperatures, and shortening day length. Populations in the permanent roosts, however, continue to increase and persist through the winter months.

A list of overwintering sites has been compiled by The Monarch Project: forty-five permanent sites are presently known. These are situated along the coast from Mendocino County in northern California south to Ensenada on Mexico's Baja Peninsula. A small site may harbor only a few hundred individuals; the most populous have been estimated to contain approximately 170,000. The numbers of butterflies at permanent sites vary greatly and may fluctuate dramatically from year to year. Roost sites, both transient and permanent, are usually located within one mile of the ocean shoreline, although a few are found farther inland. Roosts have been found at Bakersfield in the San Joaquin Valley and in the Saline Valley in the high, arid desert of Inyo County. Whether these locations are regular overwinter sites, or are used by Monarchs that were unable to fly all the way to the coast, is presently undetermined.

Specific environmental conditions are essential to the Monarch's overwintering strategy. For this reason, all permanent roost sites have certain key features in common. For example, sites are located in clearings within shaded groves composed of both tall and short trees that have an accompanying understory of vegetation. There is usually a stream or pond nearby that serves as a source of fresh water, and there are winter-blooming plants that provide nectar.

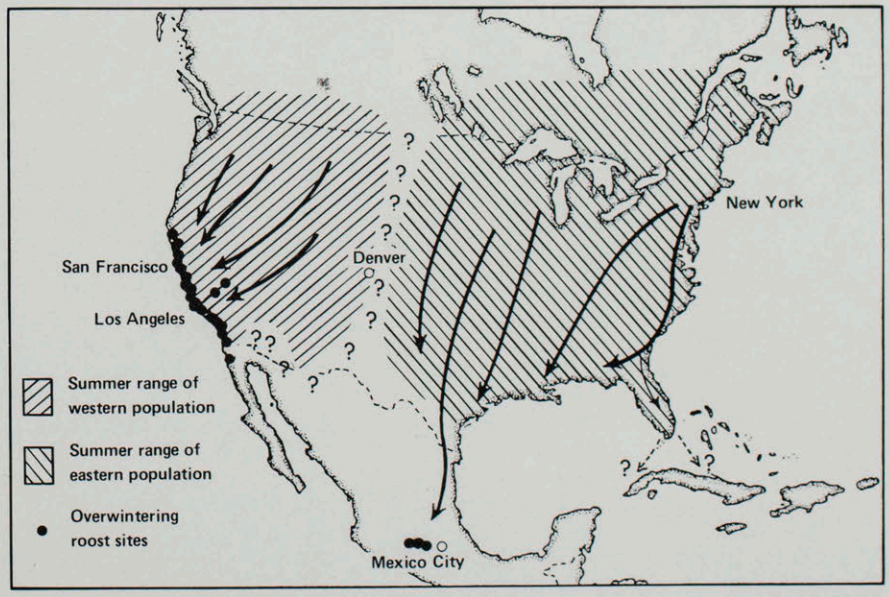
Proximity to the ocean stabilizes the air temperature at the roost. The location of the grove in gullies, ravines, or other sheltered areas offers protection from adverse weather conditions such as strong winds and temperature extremes. The butterflies cluster at positions in the clearing that allow them to bask in the mild morning sun but that also provide protective shade from excessive heat on warmer days. On cold, rainy, or overcast days, the Monarchs are inactive, remaining in their roosts and conserving valuable energy reserves. On mild, sunny days, individual butterflies leave for short sojourns, to take nectar or water, or simply bask in the sun.

According to Professor Lincoln Brower, entomologist at the University of Florida and Monarch expert, such locations act as "thermal blankets" that moderate extreme weather variations. Thus the roost site conditions ensure a more stable microclimate range for the overwintering Monarch than areas

The Education Division is scheduling four half-day field trips in November to coincide with the exhibit A Multiplicity of Monarchs, which runs from September 6 to November 30, 1986, in the museum's Director's Gallery. On the Thursday evening before the Saturday trips, entomologist Christopher Nagano will present an orientation and a walk-through of the exhibit. On Saturday participants will travel to Santa Barbara, one of the largest overwintering roosts in the state, to learn about the life cycle of the butterfly, its migratory behavior, and efforts to conserve the insect. There will be photo opportunities and the option to participate in tagging, one of the techniques used to track the migrating butterflies.

The group will meet at the Santa Barbara site at 10 a.m. on Saturday. Limited to 25 participants. Tour dates: ■ Thursday, November 6, 7 p.m., and Saturday, November 8, 10 a.m. to 2 p.m. ■ Thursday, November 13, 7 p.m., Saturday, November 15, 10 a.m. to 2 p.m. ■ Thursday, November 20, 7 p.m., and Saturday, November 22, 10 a.m. to 2 p.m. ■ Tuesday, November 25, 7 p.m., and Saturday, November 29, 10 a.m. to 2 p.m.

Please call 213/744-3342 to enroll or to obtain more information on these excursions.



Monarchs east of the Rocky Mountains move south each fall to a limited number of sites in the mountains of central Mexico. The butterflies found in western North America overwinter along the coast of California. Map drawn by Mary Butler, adapted from F. A. Urquhart and C. D. Nagano, courtesy of the Entomological Society of Canada.

situated away from the coast.

Monarchs commonly overwinter in Monterey pines and Monterey cypress trees. Interestingly, they cluster most frequently in eucalyptus trees, which were introduced to California only 130 years ago. The question of what native trees the Monarchs used prior to their adaptation to this Australian tree has two likely answers. First, the butterflies may have used only native pines for roosting. In that case, their overwintering range would not have extended farther south than the central California coast. Another possibility is that the Monarchs may have used not only pines but other native trees in coastal canyons throughout the state and have since expanded into nonnative eucalyptus trees for their overwintering roosts.

Aggregates of the clinging butterflies form on branches or occasionally around the trunk. The heights of the clusters range from as low as four feet to over seventy feet above the ground. Such variations in height are due to altitudinal microclimatic changes at the site. Although a particular site may be occupied with predictable regularity from year to year, the specific trees on which clusters form may differ. Again, it is thought that this may be partly in response to differing microclimatic conditions.

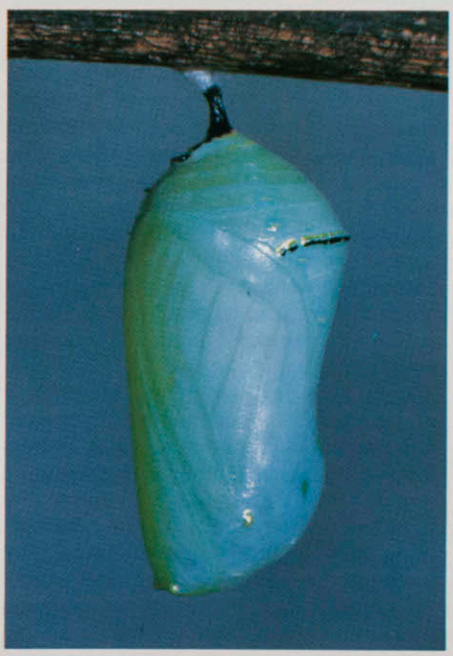
Most mating takes place at the end of the overwintering period. However, it may occur infrequently whenever the air temperature is 70 degrees Fahrenheit or higher. In mid-January mating increases steadily, until a peak is reached in late February. After mating, the Monarchs disperse for their spring return migration. This generation will not return again to the overwintering sites—the lifespan of migrating Monarchs ranges only from six to nine months. Instead, the migratory cycle is continued by the generation that matures in late summer and inherits the genetic capacity to repeat the migratory behavior.

(Continued on page 26)

A cluster of overwintering Monarchs girdles the trunk of a eucalyptus tree in a coastal grove. Although they are not native to California, eucalyptus trees are frequently used by Monarchs as overwinter roosts. Photograph by Donald Anderson.

Above: A source of drinking water is present at or near roost sites. This may be supplied by a stream or pond or from human sources such as watered grass lawns. Here Monarchs take advantage of dew-laden vegetation near their roost on a sunny January morning. Photograph by Victoria Johnson.

Below: Monarch caterpillars rely on milkweed as their sole feed source. Besides nourishment, the milkweed provides chemicals that render the Monarch, in both its larval and adult stages, poisonous to many bird predators. Photograph by Julian P. Donahue.



The caterpillar changes into an adult butterfly in the jewellike chrysalis. This stage lasts only for a few weeks, after which the beautiful adult Monarch butterfly emerges. Photograph by Nelson Baker.

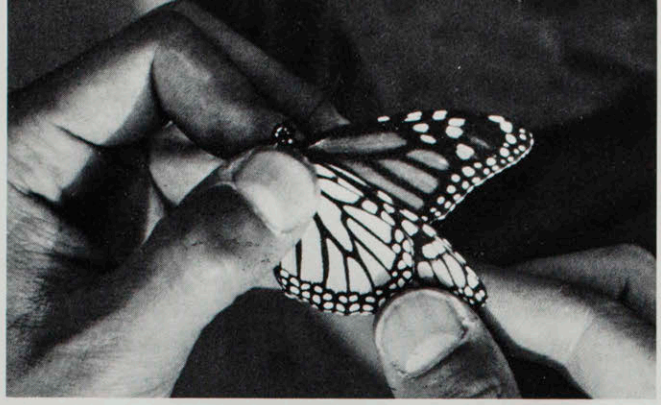
(Continued from page 24)

Saving the Migratory Monarch. The North American populations of the migratory Monarch are presently on a collision course with various commercial and governmental land-use objectives because of the narrow range of overwintering site conditions the butterflies require. The problems facing the Mexican overwintering sites range from loggers interested in felling trees from forests where the butterflies roost, uncontrolled tourism, and deforestation for agricultural purposes. The threats to both the eastern and western migratory Monarch populations clearly are serious. Total loss of these sites would spell the disappearance of the millions of Monarchs from their summer breeding range over much of North America. Only small resident populations would remain, restricted to regions where winters are free from freezing temperatures. One of nature's most splendid wonders would cease to exist or would be greatly modified. The International Union for Conservation of Nature and Natural Resources, a worldwide network of concerned governmental agencies, private organizations, and scientists, has designated a special category for the threat to Monarch migration: *Endangered Phenomenon.*

What are the specific threats to the overwintering roosts of the western North American population of Monarchs? And what measures can be taken to conserve and manage the insects that depend upon these sites?

Human activities, primarily real estate and agricultural development, threaten the overwintering localities in California. As houses, apartments, and other structures have been built in a number of roost areas, the Monarchs are forced to abandon the sites. Removal of the roost trees or thinning of the vegetative understory for firewood, aesthetic purposes, or real estate development opens holes in the thermal blanket. Significant changes in the precise humidity levels and the air temperature required by the butterflies may then follow. The potential for conflict exists between human land-use objectives and the Monarch's overwintering needs. But the two are not mutually exclusive. Current ecological research offers evidence that roosts can remain in clost contact with civilization under specific mitigating conditions.

Uncontrolled tourism, in which people carelessly trample the vegetative understory, walk on downed butterflies, climb roost trees, build campfires, or even collect Monarchs as souvenirs, also poses a threat to the California overwintering sites. Excessive disturbances may also force the insects to fly unnecessarily and deplete their fat reserves, wasting the energy sources needed for surviving the winter and the spring migration. Smoke from campfires makes them drop en masse to the ground where they are subject to freezing or destruction by mice or other predators. Fires started by human carelessness can destroy the groves altogether. Dry-season fires in 1985 eliminated a number of Monarch overwintering sites.



A captured Monarch about to be tagged by a member of The Monarch Project. This tagging program provides valuable information on the Monarch, including individual life span, the size of overwintering roosts, migration routes, and distances traveled. All photographs on this page by Donald Anderson.

Some sites are located on public land, including military bases, nature reserves, and federal, state, and local parks, but responsible officials are often unaware of the overwintering populations. This is because the roosts are occupied only in the fall and winter, and even if the butterflies are present, the butterfly clusters may easily go unseen.

Fearing the loss of such a fascinating phenomenon, organizations such as The Monarch Project in Canada, Mexico, and the United States are carrying out cooperative efforts to protect and manage the Monarch. The Monarch Project is now in the second year of its effort to conserve the western population of the North American Monarch. A four-phase operation is involved: first, locating all the overwintering sites in California; second, determining the basic requirements of the insects through detailed studies of their ecology; third, mapping the migratory routes by tagging butterflies; and, fourth, protecting and managing the roosts.

Overwintering sites are being identified on the basis of information from sources such as books, magazine articles, newspapers, and interested people. Entomologists from The Monarch Project are also conducting fieldwork to verify published and verbal accounts and to locate new sites.

Information on the basic requirements of the overwintering butterflies is being gathered through intensive ecological investigations. This information will be used both to determine the ecological needs for roosting Monarchs and to assess changes in the western North American population. The data will also help planners evaluate proposed development at the sites. At each overwintering site the most important data variables are population size, specific cluster locations on trees (for example, at the tips of branches, on the trunks, and so on), and cluster height above the ground. The air temperature, wind speed and direction, and distance to water and nectar sources are also recorded.

Individual butterflies are being tagged as another means of assessing the status of the western North American popula-

The label is pressed onto the wing and then folded over and pressed onto the other side. Each consecutively numbered tag bears instructions to mail the Monarch back to The Monarch Project. The finder is sent a letter telling where and when the butterfly was tagged.

A small area has been gently rubbed free of pigmented scales so that the label will adhere to the wing of the Monarch. The scales give color to the wings; their removal does not harm the butterfly.

tion. The staff and volunteers of The Monarch Project tagged a little over 18,000 butterflies during the 1985–86 overwintering season.

The data obtained from tagging will give an idea of how long the butterflies live, how far they range from their winter roosts, and where they move to in the spring; a program to band the Monarchs in their summer range is also currently underway. Tagged butterflies that are recovered are used to map the migration routes, and, along with the site survey, identify conservation trouble spots allowing The Monarch Project to concentrate its efforts more effectively.

There are no federal or state laws in California specifically protecting Monarchs. However, they can be given favorable treatment under statutes dealing with natural resources and the environment. For example, the roost trees can be protected by the Coastal Commission since they are within the Coastal Zone. Several other planning and regulatory agencies, as well as many of the coastal county governments, have indicated willingness to safeguard the overwintering sites if their location and environmental requirements were known. The Monarch Project is producing management guidelines and lists of site locations that are being distributed to interested city, county, state, and federal agencies.

A number of government agencies have already used this information. The California Department of Parks and Recreation used it in 1985 in an effort to mitigate the effects of remodeling Gaviota State Park in Santa Barbara County on the overwintering Monarchs there. The department rerouted a planned road to maintain the microclimatic conditions of the roost. Santa Barbara County also used data provided by The Monarch Project in an attempt to restore a roost destroyed by a landowner. San Luis Obispo County is using data supplied by The Monarch Project to protect two sites in Morro Bay. Requests for assistance are increasing as The Monarch Project becomes more widely known.

The Monarch Project is protecting overwintering sites by using a number of conservation techniques. With so many of the roosts sprinkled along a great length of California coastline, traditional land acquisition strategies for habitat preservation on private holdings are not practical. Astronomically high land values all but prohibit direct purchases of the majority of sites. Therefore, other cost-effective, equally efficient methods to protect the overwintering sites are being used, primarily the establishment of easements and registration.

A conservation easement is a legal arrangement by which a landowner gives away the development rights to a piece of property by donation or sale to an appropriate organization, in this case The Monarch Project. The Monarch Project then holds legal title to the wildlife and other natural elements of the property, enabling it to protect the roost and allow scientists access for research. Under the registration procedure, the landowner maintains title to the land but enters into a nonbinding voluntary agreement with The Monarch Project to protect the butterfly roost. In return, an annual ecological check-up on the health of the site is provided as well as a management plan, if one is needed.

The critical task of habitat preservation must depend upon innovative techniques because of the skyrocketing value of the real estate where the roosts are located. Such challenges make it clear that the overwintering roosts of the Monarch will be saved only through increased knowledge of the ecology and migratory behavior of the butterfly and through greater awareness of the need for its protection by government agencies and the public.

At the Goleta site, Jan Schrumpf presses a label on the wing of the last butterfly in her net. She releases the colorful insect and watches it soar away into the meadow.

The land on which the Goleta overwintering site is situated is currently in the preliminary planning stages for urban development. The fate of the grove is unknown. It is hoped that the grove and its roost trees will be protected so that the Monarchs will continue to make their return visits in the coming winters, for it is the preservation of this site and the limited number of others upon which the extraordinary phenomenon of Monarch migration depends.

For more information about the ecology and biology of Monarch roosts in California, as well as the location of some sites you can visit, contact The Monarch Project, 10 Southwest Ash Street, Portland, OR 97204.

Gary Wolfe is a Los Angeles writer. He has participated with Nagano in entomological fieldwork in Central America. His principal interests include natural history and environmental conservation.

Chris Nagano is a Research Associate in the Entomology Section and one of the entomologists with The Monarch Project. He received his graduate training in wildlife conservation at Yale University.

A tagged Monarch basks in the early morning sun. The light-weight paper label is harmless to the butterfly and does not interfere with its flight. This tagging technique was developed by Dr. F. A. Urquhart, a Canadian entomologist, nearly forty years ago.

Entomology Technician Brian P. Harris among some of the more than 1,500 specimens of exotic butterflies recently donated to the museum by retired Tucson businessman F.R. Russett. Harris is holding a rare Homerus Swallowtail from Jamaica, while the adjacent large Riker mount holds a pair of giant Goliath Birdwing butterflies from the Indonesian island of Ceram. The specimens will eventually be transferred from the Riker Mounts and placed on pins before being incorporated into the general insect collection. Photograph by Dick Meier.

"THE FINEST SINGLE COLLECTION OF EXOTIC BUTTERFLIES EVER ACQUIRED BY THE MUSEUM." Thus museum lepidopterist Julian P. Donahue described a recent donation from Mr. F. R. Russett of Tucson, Arizona. Mr. Donahue's drive to Tucson to pick up the collection in early April 1986 was well rewarded: although the collection of over 1,500 butterflies is smaller in number of specimens than many other private collections, it is exceptionally rich in species new to or inadequately represented in the museum's research collection.

Butterfly collectors will particularly appreciate the significance of acquiring a female Homerus Swallowtail (*Papilio homerus*), the largest true swallowtail in the world, found only in Jamaica's Blue Mountains. Several species of birdwing butterflies, which are the largest butterflies in the world and are found in southeast Asia and New Guinea, are also new to the collection, including *Ornithoptera tithonus*, *O. chimaera*, and *O. goliath procus* (which can be seen in the photograph above). Species new to the collection from the American Tropics include rare forms of iridescent blue Morpho

butterflies as well as several species of *Agrias*, *Prepona*, and swallowtails.

Rare, showy species such as these are so highly prized by private collectors that they seldom find their way into museum collections, where they are just as essential for research and comparative purposes as less colorful species. Mr. Russett's generous donation is thus doubly rewarding to the museum and to the public it serves—species usually retained in the private sector are now available for both public inspection and scientific research.

THE LENHOFF HOPI KACHINA COLLECTION. Contemporary kachinas collected by Mrs. Cecille Lenhoff, and recently donated to the museum by her family in her memory, have gone on display in the museum's south foyer. These fine carvings by Henry Shelton, Herb Komayose, and Paul Sewemaenewa are a welcome complement to the museum's collection of early twentieth-century Pueblo kachinas.

Kachinas are an important part of the Hopi ceremonial system, which serves to maintain the economic and societal balance of the community. Kachina dolls were traditionally carved in solitude by men from cottonwood roots; the dolls were then given to a child, usually a girl, by a kachina dancer. The oldest known examples of kachina dolls date from the 1800s and were flat and simply painted with mineral-based paints. By 1900 dolls attained a slightly more sculptural form that nonetheless retained the shape of the cottonwood root. During the twentieth century more elaborate detail began to be developed, including the "action" kachina dolls carved in the likeness of a kachina dancer in motion that appeared around World War II.

In the last forty years the trend in kachina doll carving has been to increased complexity in appearance, often requiring the addition of pieces and the use of materials such as cloth, leather and fur, glass beads, bells, feathers, yarn, plastic plant material, and acrylic paints. The contemporary kachinas in the Lenhoff collection include depictions of the *Kooyemsi* or mudhead kachinas, the Koshare Hano clown, and the *Angwusnasomtaga* or Crow Mother kachina. The Lenhoff kachinas will be on exhibit through January 1987.

MUSEUM TECHNICIAN WINS LIGHTING AWARD. Barbara Allen, Museum Technician in the Natural History Museum's Exhibitions Division, has received three awards from the Illuminating Engineering Society of North America. She was honored for her lighting design of the Seaver Hall of American History, Growth of the Nation, 1815–1865, which opened in 1984. The awards presented to Ms. Allen were for exceptional design, South Pacific Coast Region; for good lighting practice, Southern California Section; and the Edwin F. Guth Memorial Lighting Design Award of Merit, Southern California Section.

The *Talavi* or Early Morning Singer kachina at left by Herb Komayose vividly illustrates the intricacy of modern kachina artistry. Shown at right are two *Angwusnasomtaga* or Crow Mother kachinas. The newer figure (right) was made by Henry Shelton. The older kachina (left) was carved at the turn of the century. These kachinas are 3 of the 28 from the Lenhoff Hopi Kachina Collection on display in the museum's south foyer until January 1987. Photographs by Susan Gipson.

BOOK REVIEWS

THE MACHINERY OF NATURE: THE LIVING WORLD AROUND US—AND HOW IT WORKS by Paul R. Ehrlich, Simon & Schuster, 1986. Hardbound, 320 pp., $19.95.

In his new book Paul Ehrlich, author of *The Population Bomb*, equates the science of ecology to the vast, complex workings of a machine, an ecosystem being, in his words, a "natural machine." As an ecologist, a sort of systems analyst within that machinery, Dr. Ehrlich describes in this book various aspects of ecology, including energy flow, nutrient cycling, population regulation, foraging strategies, the evolution of sex and social systems, coevolution, resources partitioning, determinants of species diversity, and food web structure. The incredible range of subjects covered in this book is reflective of the diverse and complex nature of the science. Dr. Ehrlich does a remarkable job of bringing together the essential principles of ecology in a cohesive and coherent manner, using plain language and without assuming the reader has an extensive background in biology.

Ehrlich explains that ecologists study the interrelationships between various parts of the system or machinery. These scientists cannot be specialists in a narrow discipline but rather pursue interdisciplinary studies, acquiring knowledge in many diverse fields. The proverb "you can't see the forest for the trees" well illustrates the ecologist's need to step back and view the whole structure of the ecosystem, including the underlying, invisible interactions that bind it together. These interrelationships are not only between plants and plants or plants and animals, but also include the role of humans in the grand scheme of things—humans interacting with one another and with the planet.

Dr. Ehrlich provides a foundation for understanding ecological principles and illustrates how humanity's ignorance and disregard for the balance of nature is leading to the impending destruction of the planet. He chronicles the effects of pollution, which knows no political boundary, as in the acid rain produced from our factories that is silently killing thousands of acres of forests in Canada, and illustrates the spread of DDT, now banned in the United States but still sold by U.S. companies to Third World nations, through the food chain. The theme running through this book is of humanity's integral role within the planet's ecosystem and ultimate responsibility for its actions therein. Dr. Ehrlich vividly describes the ecological repercussions of a nuclear war, the so-called nuclear winter, and of the greenhouse effect, the aftermath of our overuse of fossil fuels.

This thought-provoking book provides an exceptional coverage of current research trends and thought in ecology, from mass extinctions to the origins of sex. As in any science, controversy rages around many new and old theories; Dr. Ehrlich equitably attempts to voice both sides of the issues. The author details many examples of each principle without explaining the technical science behind the study, occasionally leaving the reader questioning and wanting further information. Nonetheless, Dr. Ehrlich demonstrates his eclectic array of knowledge and his depth of conscience in this masterful work.

Judith L. Chovan
Science Education Specialist

On Becoming a Biologist: A nineteenth-century entomologist at work.

ON BECOMING A BIOLOGIST by John Janovy, Jr, Harper & Row, 1985. 160 pp. cloth, $15.95.

When the *Terra* editors asked me to review John Janovy's new book, I jumped at the chance. Janovy, a professor at the University of Nebraska, is probably best known for his natural history journals *(Keith County Journal* and *Yellowlegs)*, which I have read and enjoyed. I was intrigued to find how much Janovy's observations *On Becoming a Biologist* matched my own experiences.

Janovy's book is pertinent to all biologists, from amateur naturalists to professional organismal biologists to the most reductionist of molecular biologists. He skillfully discusses biology in a philosophical sense: what it is, how it is practiced, how it relates to the rest of the world, and the responsibilities of biologists. At the same time, he pragmatically describes how to become a biologist and what to expect from a career in biology.

On Becoming a Biologist should be required reading for every upper division biology major who plans to make the discipline a career. Janovy explains what prerequisites are necessary to understanding and doing biology: math, chemistry, physics (shudder), and, more recently, statistics and computer languages. He also recommends a broad education, arguing that such an education increases a biologist's chances of employment and makes it easier, in the long run, to shift, broaden, or focus one's research as the science grows and changes. Janovy is quite frank in stating that biologists cannot expect rewards in terms of money; most do biology be-

cause they love it. With that I wholeheartedly concur.

Sarah B. George
Assistant Curator
Birds and Mammals Section

THE FLOWERS AROUND US: A PHOTOGRAPHIC ESSAY ON THEIR REPRODUCTIVE STRUCTURES by Mary Parker Buckles, photographs by Carter Harmon, University of Missouri Press, 1985. Cloth, 118 pp., $29.

This erudite essay by Mary Parker Buckles, who is known through her books *Animals of the World* and *Mammals of the World*, is accompanied by almost two hundred photographs of extraordinary quality by the late Carter Harmon. The book's six chapters couple sound botanical information with intriguing views in flowers, fruits, and the sex life of flowering plants. "The photographs are the heart of this book," states the author, and the surprise is that they are not used merely for decoration but are adjuncts to specialized discussions of pollination biology.

I was pleased to see the diversity of flowers treated. Flowers to the South, the Smoky Mountains, the Midwest, and the East as well as cultivars are discussed. Some of these genera are found in the western states, but there is a notable absence of primary members of the flora west of the Rocky Mountains. Common names are augmented with genera and species when they are known to the author, which is most of the time.

Buckles's experience as a former editor and writer with the National Audubon Society serves her well in this new work. Readers who are intrigued by the intricacies and machinations of the birds and bees could do no better than to delve into the lavish and informative book, *The Flowers Around Us.*

William A. Emboden
Research Associate, Botany

BIRD WATCHING WITH AMERICAN WOMEN: A SELECTION OF NATURE WRITINGS edited by Deborah Strom, W. W. Norton, 1986. American women have long been writing with wit and style about birds, but their work is largely unknown today. The role that women played in the early conservation movement cannot be overestimated. Many of them alerted the public to the wanton destruction of birds, often in the name of fashion. Mabel Osgood Wright, president and founder of the Connecticut Audubon Society, said of these efforts as she surveyed an opening night audience at a fashionable theater: "During the five minutes' millinery show allowed, before the rise of the curtain causes the well-bred to unhat, absolutely no feathers were discoverable, save for a few white breasts, Ostrich, and Maribou plumes; the effect of so much softly draped, and delicately tinted gauze, mingled with gold, silver and flowers, gave greater brilliancy to the house than had a Bird of Paradise, a Hummingbird, or a Cockatoo been perched on every head." *Birdwatching with American Women* also includes selections written by women accompanying their ornithologist husbands in the field. The last selections are written by women who were or are themselves ornithologists and naturalists. Hardbound, 286 pp., $17.95.

CALIFORNIA: A PLACE, A PEOPLE, A DREAM edited by Claudia K. Jurmain and James J. Rawls, Chronicle Books, 1986. An eclectic sampling of the extraordinary exhibit that opened at the Oakland Museum's Cowell Hall of California History in 1984. The catalog's essays are provided by historians, novelists, and curators associated with the exhibit, which focuses on the rich history and the lively contemporary spirit of the Golden State. Paperbound, 154 pp., $16.95.

OUR NATURE by Bil Gilbert, University of Nebraska Press, 1986. In this volume collected from pieces published in *Sports Illustrated* and *Audubon*, Gilbert describes the fascination of rattlesnakes, hawking, and the life of Carl Linneaus. Readers who live in southern California, which has its share of exotic fauna, will be particularly interested in his essay on the wild population of monk parakeets that survives in—of all places—Chicago. Hardbound, 267 pp., $17.95.

LATE LOWLAND MAYA CIVILIZATION: CLASSIC TO POSTCLASSIC edited by Jeremy A. Sabloff and E. Wyllys Andrews V., University of New Mexico Press, 1986. This volume explores recent discoveries and interpretations by archaeologists of the years between the heyday of Maya civilization in the eighth century A.D. and the arrival of the Spanish in the sixteenth. Clothbound, 576 pp., $37.50.

NORTH AMERICAN RANGE PLANTS, 3rd edition, by J. Stubbendieck, Stephan L. Hatch, and Kathie J. Hirsch, University of Nebraska Press, 1986. A valuable guide to two hundred range plants, many of which grow in southern California. Includes nomenclature, life span, origin, season of growth, growth characteristics, and historical, medicinal, and food uses. A line drawing is included with the description of each plant. Paperbound, 465 pp., illustrated, $18.95.

WOODROW WILSON AND WORLD WAR I. 1917–1921 by Robert H. Ferrell, Harper & Row, 1985. The entry of the United States into World War I was a major turning point in the history of the twentieth century, for it assured the victory of the Allies over Imperial Germany in November 1918. In this new volume in the New American Nation Series, the author illuminates the crucial role Woodrow Wilson played as a wartime president, including his inability to gain passage in the Senate for the Treaty of Versailles once the war was over. Paperbound, 346 pp., $8.95.

PATTERN AND PROCESS IN DESERT ECOSYSTEMS edited by W. G. Whitford, University of New Mexico Press, 1986. This volume provides an overview of the research on the relationships between desert ecosystems as well as the physiology and processes of four North American desert sites. Included are studies of the roles of vertebrates and invertebrates in desert ecosystems, the adaptive strategies of desert shrubs, particularly of creosotebush, and decomposition and nutrient cycling in deserts. Paper or clothbound, 160 pp., $11.95 or $22.50.

THE COLBY MAMMOTH SITE: TAPHONOMY AND ARCHAEOLOGY OF A CLOVIS KILL IN NORTHERN WYOMING by George C. Frison and Lawrence C. Todd, University of New Mexico Press, 1986. Through a careful study of fossil bones of eight mammoths found in association with human artifacts in Colby, Wyoming, the authors have concluded that the mammoths were cached for meat by hunters 11,000 years ago. Examines experiments with culling operations of modern African elephants to substantiate the evidence of human cultural activity. Clothbound, 248 pp., $25.

NEW MUSEUM POSTER

A trio of pandas plays deep in a bamboo forest on this beautiful museum poster celebrating the museum's exhibit of woodblock prints by master Chinese artist Siqing Zhou. Siqing says of his work, "The woodcut may refresh people with tranquility after a day's hustle and bustle. It may... arouse their admiration and yearning for the profound, the quiet, and the unexplored part of the natural world."
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